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The Plough, the Loom, and the Anvil:

AN

AMERICAN FARMERS' MAGAZINE

AND

MECHANICS' GUIDE;

CONTAINS 64 pages reading matter, and an advertising supplement, put up in a neat and substantial magazine form. Published monthly, at 7 Beekman Street, New York, at $2 a year to single subscribers; $1.50 each to clubs of four and upwards, and $1 for a single copy, six months, invariably in advance.

To bring our future volumes into correspondence with the year, so as hereafter to commence with January instead of July, we shall make our next (10th) volume but half the usual size—running from July, 1857, to January, 1858. This volume—half of a year's issue—will contain about 400 pages. The price will be, $1 to single subscribers; 75 cents to clubs; and all who will send the money in May shall receive the May and June numbers extra; and those who will send in June shall receive the June number extra—that is, we will send from the time of receiving the money, including that month, to January, 1858, for $1 to single subscribers, and for 75 cents each to clubs of four or more. This will not affect those who are already subscribers, but will afford others an opportunity, at a small outlay, of testing the work for themselves. The following are samples of many unsought testimonials, daily reaching us, of the substantial value of this work:

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"PLOUGH, LOOM, AND ANVIL.—We have perused the March number of this journal with great satisfaction. It has the impress of talent, research, and industry, on every page; and while it has these, it is courteous and true to sections as well as individuals."—*New-England Farmer.*

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Reader, if you want your friends and neighbors to have this work, talk the matter up among them, and form a club. To any person who will send us a club of four, we will return, as a small premium, an agricultural book worth 75 cents; for a club of five to seven, we will return a bound volume worth $1; for a club of eight or more, we will send a bound volume richly worth $2; and for the names of eight subscribers, at single rates, with the money, ($16,) we will send SEARS' PEOPLE'S PICTORIAL DOMESTIC BIBLE, a very large and elegant edition, with 1,000 engravings, worth $6—postage prepaid in each case.

If any of our old subscribers wish to form a club, and to join it, in order to avail themselves of the club price, it is but just that they should do so, and we shall make no sort of objection. Till of late, our price was $3. With 5,000 subscribers, this would have been a good business, if all had paid promptly. But it is not such a business as we desire. Aside from the injustice, on the credit plan, of paying subscribers being taxed for the non-paying, we are desirous of uttering our sentiments to larger numbers. Five thousand subscribers implies about 20,000 readers. We want to speak to 100,000; and we would rather have 20,000 subscribers at $1.50 each than 5,000 at $2 each, though we are by no means sure that it would be as profitable, pecuniarily. There can not be the least doubt that higher rates would have answered a money-coveting spirit better than those we have fixed upon for the future. But we have other aims. In our opinion, progress is possible—it is desirable—"the intense soul" longs for it; and we are perfectly satisfied with the course we have taken, only let our friends see to it that our numbers increase as much as our price has been diminished.

J. A. NASH,
M. P. PARISH,
} No. 7 Beekman Street, New-York.

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The Plough, the Loom, and the Anvil.

VOL. IX. MAY, 1857. No. 11.

Agricultural.

TRICHOLOGIA MAMMALIUM.

GREAT BRITAIN keeps about 320 sheep to the square mile; France, 140; Spain, 80; Saxony, 330; and the United States, 30. The above figures show that we keep less sheep than these nations in proportion to our territory.

The sheep of Great Britain average about one to each inhabitant; those of France, three or four to each inhabitant; and those of the United States, but one for two inhabitants. So we have but half as many sheep as Great Britain, compared with the population, and less than one tenth as many compared with the territory. As compared with France, that country has nearly five times as many to the square mile as we, and nearly six times as many relatively with population.

We manufacture annually 70,862,829 lbs. of wool; we grow but 52,576,959 lbs., leaving a deficiency for our own manufactures of 18,345,970 lbs. Believing that although a policy like this may have been wise in the past, it can hardly be so now, and certainly will not be so in the future, we can not but regard the question of sheep culture as one of very great importance. As a people we eat more meat than any other; we wear as fine coats and pants as any other; and in consideration of our climate, we shall need as many bed-blankets, flannels, horse-blankets, floor-cloths and carpets as any other people.

All this will require a great deal of mutton, a meat as digestible and strengthening as any other; and taken in due proportion with other meats, as conducive to health and long life, and with many, at least as desirable. It will require a great deal of short, fine wool, adapted to the manufacture of third rate, *second rate* and FIRST RATE fulled cloth. It will require also a great deal of *long*, fine wool, for the manufacture of unshrinkable flannels. And it will require immense quantities of coarse wools, suitable for blankets, business overcoats, carpets, etc., etc., etc.

Now we contend that it is the true policy of the American people to grow all this wool, and not to import it. The time for that has already come. The time for manufacturing it all ourselves instead of feeding and paying other nations for doing it for us is not far distant,

that is, if we are a wise people, which we suppose is to be taken for granted. The American people then, will, at no distant day, make instead of buying their woolen-wares, and will make them from raw materials of home production. The coat which our next President will wear at his inauguration is now in the farmer's soil and manure heap; but it will emerge in the shape of corn and grass; it will appear next on the sheep's back, and then on the President's; and it will be a good coat, quite as good, for all practical purposes, as the English prince and the French emperor wear, and we hope as durable and withal as handsome.

We have nitrogen, phosphorous and sulphur enough in our fields and barn-yards to make our wool from; there are men and women enough to work it into coats, pants, hose, hats, gloves and all the rest. They want employment. If you drive them all to the soil for employment, the farmer will have to work for nothing, because there will be none to buy his produce; whereas, if you give them profitable employment in the factory and the shop, they will buy the farmer's produce, and will be able to give him a good price for it, from the very fact of having steady employment.

Taking it for granted that we are a wise people, it follows that we shall not be a nation of farmers, nor a nation of mechanics, but about equally of both, the farmer sustaining the mechanic, and the mechanic clothing the farmer and supplying his implements, each enriching the other, and both upholding the Republic. The sharper and the idler will of course hang about them and devour a pretty large share of their substance, without rendering an equivalent; but that is an evil incident to the present order of things; and so they must bear it as patiently as they can. That drones should live by others' industry, that sharpers should cheat working-men, and that farmers should pay double their fair proportion of taxes, are evils that we do not expect to see remedied.

But to approach the subject again: wool-growing must and will become a great and important interest in this country. It is therefore important that sound views should prevail. It will undoubtedly be the policy of farmers, in some localities, to look primarily at the meat-giving qualities of sheep; in others, at the wool-giving qualities. Our markets will require fine wool, but they will require coarse also, and they will require meat. We have supposed that the views detailed by Peter A. Brown, LL.D., of Philadelphia, under the head of "Trichologia Mammalium," might be of great service at this time. As Dr. Brown, owing to long continued microscopic investigations of wool, has so injured his eyes as to make it inconvenient for him to communicate the results of his investigations as freely to the public as he

otherwise would, he has given us leave to speak for him, which we do with great pleasure, believing the subject important to our readers; but at the same time with some misgivings, conscious that we are not as familiar with the subject as we could desire. We would here say, that we believe Dr. Brown's views are partly the result of the study of foreign works on this subject, but mainly of his own investigations; and that whatever he has learned from the writings of others, he has subjected to the most rigid investigation before setting it down as truth; taking nothing for truth till proved.

According to our understanding of Dr. Brown, *there are two species of sheep*, and but two. These are *distinct* species, and should be kept distinct. The varieties under each may be crossed at pleasure, and thereby new varieties of fixed type may be established for the various purposes for which sheep are kept. But the species should not have been crossed, as *has* happened, till now the pure blood of either is rarely found.

One of these species produce hair, the other wool, and the descendants of the two both hair and wool. Some of our readers may suppose that there is no very fixed and definite distinction between hair and wool—that hair is nothing else than coarse wool, and that wool is fine hair and nothing more. This is not so. Wool may be coarse and hair may be fine. Irrespective of coarseness and fineness, they are unlike in form and structure, as unlike as the cotton plant and the flax plant, or any two productions of nature. Dr. Brown supposes there is no such thing as hair turning into wool or wool into hair by change of climate; that if you take a specimen of the hair-bearing sheep northward, the hair may become finer and thicker, but is hair still, and not wool; and that if you take one of the wool-bearing sheep southward, the wool may deteriorate in quality, but will be wool still and not hair. But what is the distinction between hair and wool? This we will endeavor to explain.

All the mammalia, including man, have an integument or covering over the whole or parts of the body, called variously hair and wool. No other animals have such an integument. It is not our purpose here to speak of that of any other animal than the sheep; nor will we trouble the reader with all the distinctions that exist in this, but will confine our remarks to a few that are distinctly characteristic. On the hair-bearing sheep we find a plant-like appurtenance growing out of the skin, eliptical and hollow. When severed by a sharp instrument the section presents about the appearance of an Italic *o*, having the longer diameter one third longer than the shorter, and having a central canal from one end to the other, through which the coloring matter flows. It is made up of a great number of fibres running lon-

gitudinally, and held together by a cortex or bark. The fibres are so disposed around an open central canal, that two sides, the opposites of each other have more of them than the intervening sides, giving to the hair the shape of a flattened tube. The cortex or bark is not continuous, but made up of scales, the end of each scale projecting a little beyond that above it; and the termini of these scales are not pointed but round; and they lie closely to the body of the hair, so as to produce little roughness, and to offer no obstruction when one hair is drawn or shoved over another. That is, there are no sharp, beard-like points to catch and hold fast to another object. This, we shall see by-and-by, is the reason why hair, however fine, will not mat—can not be wrought into fulled cloth. If you press it together it will not stay pressed; there is nothing to hold it.

On the wool-bearing sheep, we find also a plant-like appurtenance, having its root in the skin, and so much like that of the hair-bearing sheep that the unaided eye can not detect a specific difference. On applying a microscope of high power, it is found to be about twice as much flattened, to have no central canal, to be made up like the other of a great number of fibres, so arranged as to produce the flattened form of an Italic *o*, a little longer and narrower than the printer would make it, and to be covered with cortical scales. These scales are entirely unlike those of hair. Each scale is pointed instead of being round at the end; and instead of lying flat on the body of the hair, the point turns outward, so that every portion of fibre of wool is thoroughly bearded. If one portion of it comes in contact with another, a separation can not easily be effected. The peculiar shape and position of these cortical scales afford the reason why wool can be matted, or worked into fulled cloth, while hair can not.

We have before stated that the pure blood wool-bearing sheep produce wool; the pure blood hair-bearing sheep, hair; the mixed races, both hair and wool. It should be understood that the wool in these last may be as perfect as that on the wool-bearing sheep; and the hair as perfect as that on the hair-bearing. Yet the wool will not work into fulled cloth advantageously, because there is hair among it; nor the hair into unshrinkable flannel, because there is wool mingled with it. Were it possible to separate them, one would make good fulled cloth and the other good flannel; but as it is not, they are suitable for neither—will make neither of good quality.

To illustrate this matter further: suppose you buy a piece of flannel; you wash it—it does not shrink; you wear and wash it alternately till it becomes thin; still it does not shrink; the garment keeps its shape, does not curl or become rough, is as pleasant to the last as when first made—if anything, a little more so; has a soft, silky feel; and when

it is worn out, you would give almost any thing if you could buy another such piece. That flannel was made of hair.

You buy another piece. It does not shrink very much, but it shrinks unevenly. Some portions shrink more than others. It becomes uneven. Spread it on a table, and it will touch the surface of the table only in here and there a place, while other parts will rise from a quarter to half an inch above the surface. It is doubtful whether all the skill of the cloth-dresser could bring it into shape again. This was made of hair and wool; and hence its unequal shrinkage and its roughness.

Again, you buy another piece of flannel; it shrinks evenly, keeps its smoothness, but soon becomes too small and entirely too thick—so compact and solid as to stop a healthy perspiration and become unfit for use. This was made of wool. The laundress need not be scolded for its shrinking. Its nature is to shrink.

You put on a beautiful coat, and get caught in a sudden shower. After your coat is dry, it is glossy and smooth as ever. This was made of wool. Again, you go fishing, slip from a log and wet the legs of your pants. When dry they present a curled, puckered surface. They were made of hair and wool. The wool shrunk a trifle by wetting—the hair did not; and hence their unevenness. You never can make them look well again.

Wool cloth shrinks evenly; cloth made of hair and wool, unevenly; that of hair, not at all.

The conclusion from all this is, that the two species of sheep should not have been crossed with each other. We may breed together varieties, within the same specific limits, and good results follow; but when we breed over the line separating species, the effect, so far as the propagation of valuable qualities is looked for, is bad, and only bad. From the double parentage of the mule, you may get an obstinate worker; and so far your object will be attained; but an attempt to carry the stock a few generations further would of course fail. We think it may be laid down as an infallible rule that, except for a mere temporary object, breeding should be rigidly confined to the same species.

From an immense number of facts, collected and compared with great labor, Dr. Brown, if we understand him rightly, has established the following conclusions:

1. The hair-bearing, or as we might now call them, the flannel-producing sheep, flourish best in island or coast localities; not but that they will do passibly well every where; but he is satisfied that within the influence of sea-breezes is their most appropriate home. Our Atlantic coast, and so inward to the head of tide water, from

New-Brunswick to Mexico,—a region now occupied by more than twelve millions of people—he supposes is at least as favorable to the growth of this kind of sheep as any in the world.

2. Inland, hilly or rolling country, with a tolerably dry atmosphere, he supposes the most favorable to the wool-bearing, or as we may now denominate them, the fulled cloth producing sheep. He lays it down that with the exception of the Atlantic strip above named, and some other oceanic regions, our country is the best in the world for the production of fine wool and faultless fabrics.

3. Our first care should be to separate the wool-bearing from the hair-bearing sheep; to breed one or the other, not both, on the same farm, and if possible in the same region. Dr. Brown supposes that a vast proportion of the existing sheep are mongrels or hybrids, producing a mixture of wool and hair; and that the breeder should look first of all at this point, and procure those to breed from that are of absolutely pure blood. The following paragraphs are from a published ecture of Dr. Brown on the policy of sheep culture for our country:

We have in the United States 180,528,000 acres of unimproved lands. Americans! Patriots! would you serve your country?—*Fill them with sheep!* Every valley in this State (Pennsylvania) should be dotted with these valuable animals—every hill and mountain should be crowned with a flock, Places hitherto desolate should reverberate with the cheering sound of their bleating. The silver tinkling of the wether's bell should be echoed and reëchoed throughout the entire length and breadth of the land. Sheep are the natural riches of man.

Every country, in every age, has so esteemed them; historians have deemed them worthy of their pens; poets have immortalized those who carried off the golden fleece; no landscape painter ever considered his picture complete until he had introduced a flock of snow-white sheep.

Sheep-breeding *commenced in Paradise*, and it has engaged the attention of patriarchs, kings, princes and patriots in all succeeding time. The flocks of Abraham and Lot were so large that the land would not support them united.

In Spain, (the fatherland of the merinos) besides their sedentary flocks, thousands of the transhumantes or migrating breed are driven some hundreds of miles, twice a year, in search of pasture.

In this *immense empire*, we enumerate a paltry fourteen millions of these invaluable animals!

The enlightened and industrious sovereign people of this great and still growing country should awake to the importance of sheep-breeding and wool-growing; and the earnest endeavor of all agricultural societies should be to encourage the selection of pure breeds!

FERTILIZERS — CHOICE OF — PRESERVATION.

We have seldom found the necessity of manures, and the choice to be made from among them, expressed so much to our minds as in the following, from the pen of Prof. Campbell of N. C., in the *Soil of the South*. Prof. Campbell says:

"Soils that have been long under cultivation, must necessarily become deficient in many of the elements of fertility, unless the exhausted supply be restored from time to time by proper applications. Without this restoration, farming would soon become a profitless business. Labor can not bring from a soil what is not there. When you wish your horse to do long and faithful service, you feed him well; if you do not, his strength soon fails, and whip and spur are insufficient to revive his drooping energies. So, plough and hoe are equally inefficient in reviving the energies of a *starving field*. Economy in sustaining or restoring the strength of soils, is no less important than economy in feeding horses and cattle. But as an abundance of such nutritious food as may arise from the products of home culture is most economical in feeding stock, so the free application of home made manure, *well collected and well kept*, is the most economical of all fertilizers. The farmer who goes abroad to buy guano, while he leaves at home masses of manure, from which wind and rain are rapidly carrying off some of the very same elements that give to guano its value, is not acting more wisely than he who leaves his hay to be drenched with rain and bleached by the sun, while he goes out to buy oats or barley to take the place of hay in his next winter's feeding. Let what you have be made as available as possible; then, if more is needed, it will be time to begin to look abroad for it. After all proper means have been resorted to for collecting and preserving your barn-yard, stable and hog-pen manure, ashes, soapsuds, etc., you can better afford an occasional ton of guano for the sake of an extra crop of wheat, and a succeeding 'fair set' of clover."

Reader, the above is worth reading *once*, if you agree with it, for it will confirm you in the right, but *more than once*, if you do not agree with it, for in that case it may set you right. It most assuredly will, if you weigh it thoroughly. You may better purchase guano, superphosphate, poudrette, anything that will answer the purpose, than cultivate land destitute of the ingredients for a crop. But what most pleases us in the above is, that "You can better afford an occasional ton of guano" after prudently preserving and applying the home manures. On the preservation and application of these, your success greatly depends.

In speaking of the importance of preventing loss in manures, during the interval elapsing before they can be applied, Prof. Campbell states the following experiment:

"A barrel was filled with fresh scrapings from the stalls of horses. Over the manure, as thrown in, a little ground plaster was sprinkled

from time to time. After the barrel had been compactly filled, it was allowed to stand some weeks, until it had gone through the heating process found always to take place when newly collected manure is thrown into heaps. But during this heating or *fermentation*, (as it may with propriety be called,) there was none of that 'vapor' of strong odor which ordinarily arises from fermenting manure heaps. When the mass had become cool, clean rain water was passed through it and collected at the bottom of the barrel. This water was found to contain one of the elements of plaster, and one of the volatile substances (carbonate of ammonia) above alluded to. On emptying the barrel, a white powder, looking very much like plaster, was found mingled with its contents. But when tested, this powder was found to contain only one of the elements of plaster; while it contained also one element of the violatile carbonate of ammonia just mentioned."

This experiment, without some explanation, might seem of little value to practical men. Prof. Campbell explains as follows:

"In order that those who are not familiar with the principles of chemistry may understand the foregoing experiment and fully appreciate its results, a little explanation is necessary.

"The volatile matter which escapes so rapidly from heaps of manure, and the presence of which is perceived by its odor about stables where horses are fed, is called by chemical writers 'carbonate of ammonia,' consisting of carbonic acid and ammonia, combined.

"Plaster (gypsum) is, according to chemical nomenclature, a sulphate of lime; *i. e.*, sulphuric acid and lime combined. Liebig says, 'carbonate of ammonia and sulphate of lime (gypsum) can not be brought together at common temperatures without mutual decomposition. The ammonia enters into combination with the sulphuric acid and the carbonic acid with the lime, forming compounds which are not volatile; and, consequently, destitute of all smell.' Thus, we get two new compounds; namely, carbonate of lime in very fine powder, and sulphate of ammonia, which is not volatile, and of course not liable to be lost in the same way as the carbonate of ammonia. This sulphate, however, is readily dissolved in water. Hence, in the experiment above detailed, it was carried out in solution by the water and manure."

An important inference from the above experiment, as made and as explained by Prof. Campbell is, that the manures accumulating about the barn, during the summer, should be preserved in a similar manner. Let them be thrown together, under a shed if that is convenient, or in a pile outside if not; if the latter, the pile should be so high that rains may be retained in it and evaporated instead of running through, and let ground plaster be mixed, say half a peck to each load of the manure. We would say a bushel to a load, were we looking only at the preservation of the manure; but we have to look beyond that—to the application. If twenty loads were applied to the acre, it would imply as many bushels of plaster, which would be entirely too much. We would therefore mix but four quarts of plaster to the load, as

this would give a fair allowance for the land on which this manure might be placed, implying as much sulphuric acid as would be likely to benefit the land. And then we would mix with the manure other substances—swamp muck, if it could be had, or, if not, leaf mold, scrapings from hedges, or loam, if nothing better were at hand; this to act as a retainer of the virtues of the manure.

So little plaster as we have recommended might not be sufficient alone to retain the ammonia, and hence the advantage of something more; and we venture to say that by adding well-cured swamp muck, the quantity of manure may be doubled, without deteriorating but very little, if at all, the quality. Water should be applied if the mass is likely to become entirely dry. *Moist always, but never leached*, is the rule for home manures. Can we make the reason of this plain to the non-chemical reader? we will try:—water is itself a pretty good retainer of ammonia. If the surface of a manure-heap could be always kept moist by the constant sprinkling of a little water—enough to penetrate eight or ten inches, but not enough to leach the manure—it is doubtful whether any other retainer would be needed. The water would keep the ammonia in the heap about as safely as a high fence will keep cattle in a yard, even if no other retainer were employed; whereas, if the heap is suffered to become entirely dry, it is doubtful whether anything would keep the ammonia from escaping. Perfectly dry plaster, in manure that is entirely dry, has very little effect. Moisture is necessary to the result explained by Prof. Campbell, that of changing carbonate of ammonia into sulphate, as all chemists agree that plaster has this power in but a very limited degree till partially dissolved in water. If we have made ourselves understood, it will be seen why all manure-heaps containing ammonia should be kept in a moist state.

In case of dairies, where a large number of cows are yarded nights, it would be too much labor to preserve the manure, as we have recommended; and our recommendation would be defective, because it makes no provision for the liquid excrements, which are really of more value than the solid. The way to make the manure of the greatest possible value is, to carry into the yard, after it is cleared in the spring, large quantities of absorbent matter as swamp muck, leaf mold, turf, or rich loam, to cover the whole surface with this, and then to add more every few days, till the mass becomes so thick that a smart rain will no more than saturate it, and a long drouth will not entirely dry it. In this way, if the yard is a little higher at the circumference than in the center, the soluble salts will not be washed away, and the ammonia will be preserved. Considerable labor is implied, but then the manure from twenty-five cows will be worth a

hundred dollars, when if left to itself to become alternately as dry as tinder and sufficiently liquid to run into the nearest brook, it would hardly be worth twenty. If the difference would pay for the labor and something more, it should be done. The whole yard by such a course becomes a manure heap; but owing to the great thickness of the mass, it does not become soft by rains to the extent of being impassible or as nearly so, as when the yard is left to itself; and in dry weather the mass is not often so dried through as to allow the ammonia to escape. We will only add that we have often seen this in practice, and have seen the good results both in the greatly increasing quantity of the manure, and in favorable effects on crops. N.

FERTILIZERS—EQUIVALENT VALUES.

In the last agricultural work of the late Prof. Johnston, a work of very great value, we find the following comparative estimate of the relative values of different animal manures, based mainly on the amount of nitrogen contained in each.

In reference to the relative quantity of nitrogen as the ammonia-making element, he has arranged them in the following order—the number opposite to each representing the weight in pounds, which is equal to, or would produce the same sensible effect upon the soil, as 100 lbs. of farm-yard manure.

Farm-yard manure, 100; solid excrements of the cow, 125; of the horse, 73; liquid excrements of the cow, 91; of the horse, 16; mixed excrements of the cow, 98; of the horse, 54; of the sheep, 36; of the pig, 64; dry flesh, 3; pigeons' dung, 5; Flemish liquid manure, 200; liquid blood, 15; dry blood, 4; feathers, 3; cow hair, 3; horn shavings, 3; dry woolen rags, 2 1-2.

Now we do not believe that 2 1-2 lbs. of dry woolen rags, or 3 lbs. of horn shavings, or three of feathers, is, or ever can be, *known* to be worth precisely as much as 100 lbs. of farm-yard manure. Prof. Johnston did not believe that. No man, combining as much science and common sense as he has shown, could ever believe that precise truth has been or can be reached on these points. But the above is, after all, as near an approximation probably to the relative values of animal manures as can yet be made. It is valuable, as showing the great worth of certain substances which have heretofore been neglected. It is valuable also as giving the farmer a clue to the question, What he can afford to give for the refuse of manufacturing establishments and slaughter-houses in his neighborhood.

Now we would not advise the farmer to pay the worth of 100 lbs. of farm-yard manure for 2 1-2 lbs. of woolen rags, because we do

not believe that there would be a wide enough margin for profit, and it is quite time that he, as well as all others, should be looking out for a profit on his business; but certainly the above estimates show the farmer that if there is a woolen mill in his neighborhood, he should look to it that the wastes do not go down the river. We have seen results from their use on grass crops, which would approximate the value ascribed to them by Prof. Johnston; and so of many other substances to which he attaches a high—perhaps rather too high—value; and we fully believe that great loss is sustained by farmers not appreciating their full value.

We can not close these remarks without giving our readers a paragraph or two from Prof. Johnston's pen, which strike us as eminently discriminating and important. His views about mixing animal manures as much as is convenient, and then of employing a rotation of manures, where the mixing of them is inconvenient, are certainly true. If our barns were so constructed that every thing that goes from them, whether the stated accumulations of the place, or substances brought there for the purposes of preserving and increasing the fertilizers, were perfectly mixed together in one mass, not violently fermented, but commencing a moderate fermentation at the time of their application and for a few weeks before, we think that this would come about as near the idea of feeding the soil with all the elements required by crops as we shall be likely to get very soon.

Perhaps we talk too much about this matter of fertilizers. Manure, some one may say, is not a very sublime subject. Well, we know that. But it is the essence of good husbandry; and good husbandry is at the foundation of a vast amount of human weal; and so we are prone to talk about it in every number, without much inquiry whether the fastidious will be pleased or not. What could not a farmer do with his crops, and how would his fields teem with rich products, filling his purse, enabling him to indulge himself with a new suit and his wife with a new dress as often as real, sober, good sense would desire, to ride in a comfortable carriage after a decent span, to educate his children as well as the best, if—if what?—why if—and here we come back to the old subject, low, vulgar, common-place, always on hand—if he had manure enough, yes, if he had a capacious barn-cellar, or if the ground would not admit of that, a capacious stercory near his barn, well filled with the accumulations of a year, from the stalls, styes, vaults, swamp, hedge, grove, factory, bone-mill, slaughter-house, every place that can add to the growth of crops, all mixed in one homogeneous mass, and fermented sufficiently to have sprouted any seeds it might contain, but not enough to have lost its ammonia.

Let us see what such a depot on a well tilled farm of one hundred

acres might contain. We will set it down in tons. Say solid excrements of animals of all sorts, 100; liquid do., 60; swamp mud, 300; half-decayed leaves and hedge-scrapings, 40; woolen flocks from neighbor Smith's mill, 1; ground plaster, 1; ground bones, 1; sundry items, which we can not name, because we do not know the locality where such a practice is to be adopted, 298; making in all 800 tons. But all this, if it had been kept under cover, and watered only enough to prevent anything like a violent fermentation, would have diminished in weight, without losing a particle of its value. By escape of watery vapor, the liquid excrements for instance, would have become nothing more or less than a ton or two of concentrated guano, diffused through the mass, and ready to act promptly on the crops. The whole might weigh, if it were managed with skill, 600 tons, and a good farmer of 100 acres ought to have that amount every spring, provided his locality is such that he can gather the materials without too great expense. It will imply labor at best; but then, where materials are at hand for augmenting manure, it is the best paid labor on the farm. The farmer who will make 600 loads of good manure, and not expend more than fifty dollars in extra labor and in the purchase of materials, can afford to buy more, in the shape of portable manures, and so can make his farm just about as productive as he pleases. There is a mighty difference whether you apply 600 loads of good, half-fermented, dryish manure, with not a hay or weed-seed in it, or 200 loads of poor, wet, sloshy stuff, full of all manner of seeds. How we wish there could be as much wisdom and skill on the farm as there is in the shop and the counting-room; and there will be ere long; in this respect there is a good time coming; we are only a little impatient that it comes no faster. But we are keeping the reader too long from the very valuable extract we have promised. With reference to the estimate, copied near the beginning of this article, Prof. Johnston says:

It is probable that the numbers in this table do not err very widely from the true relative values of these different manures, in so far as the *organic* matter they severally contain is concerned. The reader will bear in mind, however—

1. That the most powerful substances in this table, woolen rags for example—2½lbs. of which are equal in virtue to 100lbs. of farmyard manure—may yet show less *immediate* and sensible effect upon the crop than an equal weight of sheep's dung, or even urine. Such dry substances, as I have said, are long in dissolving and decomposing, and continue to evolve fertilizing matter, after the softer and more fluid manures have spent their force. Thus, while farmyard manure or rape-dust will immediately hasten the growth of turnips, woolen rags will come into operation at a later period, and will prolong their growth into the autumn.

2. That besides their general relative value, as represented in the above table, each of these substances has a further special value not

here exhibited, dependent upon the kind and quantity of the saline and other inorganic matters which they severally contain. Thus three of dry flesh are equal to five of pigeon's dung, in so far as the *organic* part is concerned; but the latter contains also a considerable quantity of bone and earth and of saline matter which is present only in minute quantity in the former. Hence, pigeons' dung will benefit vegetation in circumstances where dry flesh would in some degree fail. So the liquid excretions contain much important saline matter not present in the solid excretions—not present either in such substances as horn, wool, and hair—and, therefore, each must be capable of exercising an influence upon vegetation peculiar to itself.

Hence the practical farmer sees the reason why no one *simple* manure, such as hair or flesh, can long answer on the same land; and why, in all ages and countries, the habit of employing *mixed* manures and artificial composts has been universally diffused. When mixed manures are not employed, the kind of manure which has been used must, after a time, be changed. A species of *rotation* of manures must, in fact, be introduced, in order that a second or third species of manure may give to the land those substances with which the first was unable to supply it.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

IMPROVEMENTS AND EXPERIMENTS, INTENDED AND SUGGESTED.

MESSRS. EDITORS:—Of all the agricultural societies with which we have ever been connected, we have found a small one composed of a *few* near neighbors, to contribute far more than any others, State and county societies included, to increase our stock of really serviceable knowledge, to stir our mind to activity, to cultivate habits of attentive reading, observation and research, and to augment our interest in agricultural subjects generally; and we feel moved by this experience, and by the hope that others may be induced to try a similar plan with equally gratifying and beneficial results, to communicate to you, and to the public through you, some items of information concerning our Mutual Improvement Club. It consists then, let us say, of a very small and select number of neighbors, all of whom are employed more or less in cultivating the soil, though two of them, one of the clerical and the other of the medical profession, would not be called farmers in the strictest acceptation of the term. We meet at each others' houses about once a month, making our time of meeting always so as to secure the benefit of moonlight on our way homeward. Our time, when assembled, is employed partly in viewing the state of the farm, garden or orchard, and the operations of the season, and partly in discussing some questions of especial interest agreed upon at the meeting immediately previous. That portion of our proceedings, however, which seems to be most generally interesting, instructive

and profitable, consists in the rendering of a brief account, by each member, of such improvements as may have been suggested by recent readings, conversations, observations, etc., and which are intended to be adopted by the member who presents them or thought by him to be deserving of the adoption of the club or of farmers generally. Along with an account of intended improvements and such as seem likely to benefit the members or the public, we have occasionally accounts of experiments which have been tried, or of such as seem worth trying. By these brief accounts of improvements intended to be adopted, or seemingly well deserving of adoption, the members obtain the benefit of having laid before them, in the shortest and smallest compass, *the very cream* of all that each may have recently read, thought, planned, or observed, or in other words, the sum and substance of all that may have occupied the attention of each mind so far as practical utility and immediate serviceableness are concerned. We have the benefit, in this way, of a short and synoptical survey of the reading, thinking, planning and talking, performed by each individual member during the previous month. A great economy of time and mental labor is thus secured, as each member obtains the very best results of all the reading, and conversation, and research, and experience of the other members.

Some idea may be formed, we trust, from this outline sketch, of the interesting, instructive, and profitable character and tendency of our proceeding at the meeting of our Mutual Improvement Club. We hope the idea thus formed will be one of life and power sufficient to lead many other neighborhoods to institute similar organizations, and to maintain them in operation notwithstanding the discouragements which may arise in the incipient stages of a new enterprise. Good management and time will remove out of the way all ordinary difficulties and discouragements; and when the machinery, at length gets into good working order, results will be obtained which will amply compensate all the perseverance and ingenuity which may have been exercised. Let the number of members at first be small, and let those who engage in the enterprise be but a select few, embracing only such as are possessed of more than usual intelligence, energy, and information as agriculturists, and let them be, above all, ardent and enthusiastic lovers of improvement and progress in the science and art of cultivating the soil. Let there be no drones, nor mere followers in the footsteps of their fathers and grandfathers, for such will only clog and obstruct the wheels of the machinery of the club. Half a dozen men of the right stamp, of congenial minds and tastes, and living conveniently contiguous, will make a more efficient and prosperous organization than any larger number without zeal and in-

telligence. In every school district there might be found, it is to be hoped, half a dozen wide-awake farmers, who might contribute to each other's progress and advancement by organizing themselves into a club for mutual improvement.

To this statement of the aims and workings of a club which we have found to be both pleasant and profitable, and to the exhortation to form others of a like nature, we would now, with your leave, *Messrs. Editors*, append a few items from a report, made to the club at its last meeting, as to certain improvements which the member presenting it intends to make on his own lands, or thought deserving of the attention and adoption of the other members. He stated that while reading one of the early numbers of the current volume of the PLOUGH, LOOM AND ANVIL, he had come to the conclusion that one of the most useful improvements he could make upon his farm would be the planting of a belt of trees on the north and west sides of his orchard to protect the trees from the piercing winds of winter. He said that if he had had a protection of this kind during the last two winters, he would probably have escaped the loss of a good many peach trees and of one fine apple tree of the variety called the Baldwin. He admitted that the cold alone might have been severe enough, even with a still atmosphere, to have killed the trees referred to; but still he was quite certain that the winds accompanying the cold made it more penetrating, and reduced the temperature lower, as shown by the thermometer, than it was in sheltered positions. He said that he intended to plough up a strip two rods wide this spring, and proceed at once to plant elms and maples on the outer side, locusts and chestnuts farther in, leaving space on the inside row for some trees or shrubs of lower growth, perhaps the evergreen, recommeded in the P. L. & A., namely, Norway spruce. To be in possession of plants to be set out next spring he said, he intended to obtain seeds of locust, osage orange, and other fast growing trees, and to grow them in beds in the garden this year. Guided by the advice in the article referred to, he intended to cultivate the yellow locust most largely for his screen or belt, as it grows rapidly, and in the course of ten or fifteen years, will furnish excellent and durable posts for fencing. He seemed thorougly persuaded that cold winds injure the healthy growth and productiveness of an orchard, even when they did not kill a single limb or bud; and that a screen such as he proposed, might be made ornamental as well as useful on his premises.

The same member reported that it was his intention to try an experiment suggested by a passage in the October number of the P. L. & A., in the words following :—"A farmer at no great distance from where we write, is trying an experiment. It has now been in progress

some half a dozen years, and its object is to show whether or not three acres of medium land can be so cultivated, that after paying for all the labor and all the fertilizers, and for taxes and the interest on the original value of the land, they will give a net profit equal to that of the average of farms of a hundred acres each, in the same country." The object of our club associate is a little different. He proposes to devote a small plat of well-drained, well-manured, and well tilled land to raising a portion of every crop grown on the farm, with the object of determining whether high farming or ordinary farming is the most profitable on the whole. MORE ANON.

Remarks. Such a club should be formed in every school district. We like the plan from beginning to end. The idea of each member communicating what he has learned within the month is capital.

It is a pity that the enterprising member who is going to shut out the prairie blasts from his orchard, and thousands of other Western farmers, had not done it sooner. But better late than never. Though perhaps we should not call this late, when we consider what settlers in a new country have to contend with. In a flying trip through the West last autumn, we thought that many of the farmers, who have commenced within the last twenty years, were too late in the matter of screening themselves from sun and wind, and of procuring abundance of fuel and timber; but then we saw such evidence of spirit and improvement, as led to the expectation that they *will not* long be behind the times in that or anything else, especially as they are ordering our journal numerously.

A word of explanation with regard to the three acre experiment referred to. It should be understood that that experiment is going on in a rough, broken region, where a hundred acre farm, not improved at great expense, produces but little. We did not suppose that three acres of unbroken land—land that is land, one might say—could be made to give as much net profit by a higher cultivation as a hundred adjoining acres by an ordinary cultivation, though such will assuredly be the result on the three acres alluded to, inasmuch as there a three acre lot is returning from five to ten hundred dollars a year, at great cost it is admitted, but still with a good margin for profit above all cost, while hundred acre farms in that region, cultivated in but the ordinary manner, are giving but precious little profit, much less, we suppose, than only tolerably well cultivated farms in the region of our correspondent; and we are glad that his friend is going to vary his experiment, and make it a simple trial between high and low cultivation. On this subject see short article on "cultivation," in this number. N.

HIGH AND LOW CULTIVATION.

A FARM may be cultivated with a great deal of patient toil, but with so little good calculation, forethought, economy and thrift, as only to pay for the labor, and leave no margin for profit. "That's so."

Does it follow that there is no profit in farming, that with wiser management it only pays for the labor, that it is necessarily a merely paying but not a profitable business, barely rewarding the toil, as a man is paid who works for another, but nothing more? "That's not so."

Setting aside all considerations of general management, and looking at the one thing of *high or low cultivation*, we are quite sure that many failures of a reasonable profit may be accounted for on this ground alone. The farmers who expend too much to enrich their fields, who work them better than they can afford, and so at the end of the year get but bare pay for their labor, and are left to feel that they might as well have worked out by the day, we imagine, are, like angels' visits, few and far between. Those, on the other hand, who fail of a profit from too low a cultivation, not expending enough to enrich the soil, not working it as much as it would pay for working, are as many, to speak vulgarly, as you could shake a stick at; and they ought to have a stick shaken at them, only it is nobody's special business, certainly not ours, to shake it.

It is possible that some farmer is expending in fertilizers and labor, $1500 a year, and getting back only $1500 and enough to pay the interest on the value of the farm and the taxes; when, if he would expend but $1000 in labor and fertilizers, he might take off $1250, plus the interest and taxes, and so make a clean profit of $250. It is possible others are still more extravagant, giving an outlay of three, five and seven thousand a year, when they ought to stop with two, four and six thousand, and so are failing of their profits simply from a too intense cultivation. We imagine, however, they are far from us, and would hardly hear our warnings if we should utter any against high farming.

But too low farming is nearer home—is all around us. Let us see; —there is a farm of 100 acres; it gives $750 worth of produce on the average of years, a little more when seasons are favorable and prices high, and a little less when the reverse takes place. Well, the worth of the owner's labor, that of his wife and children, together with interest on value of farm, taxes, insurance on buildings, etc., is $750 a year, a little less than the income some years and a little more others, in the long run just about equal. Such is the history and the present

state of a prodigously large part of American farming. There is no profit; it costs just what it brings, and the occupants of the farm live by their labor and nothing else. There is a dignity and independence in being on one's own land, which we would not diminish in the public mind. Otherwise, this barely labor-paying business is no better than to work out by the month.

Now if the cost of raising the productiveness of the farm would equal the increased income, then nothing would be gained. But it would not. On half a million farms in our country the productiveness may be increased fifty per cent. by increasing the cost of cultivation less than twenty-five per cent. That there is a point in high cultivation, below which every dollar added to the cost would increase the productiveness more, and above which every dollar added to the cost would fail to be fully returned, no one can doubt. That is, there is a point of maximum profit; and whereabouts that point is, the farmer should inquire; for if he falls below that point or if he goes above it, his profits diminish; and if he departs widely from it, either above or below, his profits cease altogether, leaving him barely pay for his labor; or, if he departs too widely, the land runs in his debt, actually failing to pay fully for the labor.

We have before intimated that there is more danger of falling below the point of maximum profit than of going above it. It should be considered that some items in the expense of cultivation do not increase as you cultivate highly. Suppose you have an acre of good land, but rather hardly cropped, which you value at $100. The first cost of cultivation is the interest on its value. But that is the same, whether you take from it eighty bushels of the best corn or fifteen of the poorest. The next item, if your land is in some town and the authorities have found it, is the taxes. But these will be about the same, whether you take off thirty bushels of wheat or leave on a skimming of sorrel. Another item is the fencing. But it costs as much to fence round a light crop as a heavy one. Here then are three items of expense which are not increased by high cultivation. Only two items—the fertilizers and labor, are increased. One of these will be increased but in a slight degree. It requires considerable labor to cultivate an acre just as it should not be; and it requires not much more to cultivate just as it should be. Look at this;—if your acre is now in turf, and you wish to grow one crop of corn, one of potatoes, one of oats and two of grass the next five years, how much more will it cost you to work it seven inches deep and keep it clean, than to work it four inches and have it weedy? Not much. The difference will hardly be worth taking into the account. Almost the only item of cost of good cultivation over bad is the manure.

This, if you go in for high cultivation, will be a heavy expense. It will increase the outgoes of farming, but, up to a certain point, it will increase the income more; and to withhold the money for this seems to us just about as wise as for one who has bought a coat to make himself look decently in, to refuse to pay for the buttons, and so fail to look respectably when he puts it on.

If you put a hundred dollars' worth of manure on that acre, it will be bad policy. If you apply none, it will be bad. Somewhere between, is the true point: and in your endeavors to find that point, remember that your other expenses with that acre are about the same, whether you withhold the manure and get a very small crop, or douse it in and get a large one. Make the manure at home, as we have otherwhere advised, if possible; for on most farms, the value of the year's manure may be increased a hundred dollars by every fifty dollars' worth of labor wisely directed to that end; but if you can not make it, buy it, and don't be always growing small crops for the want of manure when every other expense is just about the same for small crops as for large ones.

MAPLE SUGAR.

The aggregate product of Maple Sugar in the United States in 1850, as returned by the census of that year, was 34,253,436 pounds, whereof the several States producing any considerable amount made severally as follows:

New-York	10,357,484 lbs.	Vermont	6,349,357 lbs.
Ohio	4,588,209 lbs.	Indiana	2,921,192 lbs.
Michigan	2,439,794 lbs.	Pennsylvania	2,326,523 lbs.
New-Hampshire	1,298,863 lbs.	Virginia	1,227,665 lbs.
Massachusetts	795,525 lbs.	Kentucky	437,405 lbs.
Illinois	248,904 lbs.	Missouri	178,910 lbs.
Maine	95,452 lbs.	Tennessee	158,557 lbs.

Considering the extension of our settlements toward the North and West, the present high prices of sugar, the general attention this year to sugar-making, and the long season in which the flow of sap, though fitful, has been continued, we estimate the maple sugar made this year at fully double that of 1850, or not less than seventy millions of pounds, worth at least ten cents per pound, or an aggregate of seven millions of dollars. In fact, we do not believe a supply of sugar equal in quantity and value to this could have been imported and distributed to the inland farmers, who will mainly consume this home-made staple, for less than ten millions of dollars.

How much has it really cost the country to make this maple sugar?—that is to say: Suppose we had not made it, how much other wealth would have been created in its stead? Bear in mind that it has mainly been made at a season when our farmers are least actively and least profitably employed, and that all the work of preparation for sugar making pertains to the very heart of winter. Our estimate is that, had no maple sugar at all been made in the United States this

year, the production of other wealth from labor directed to sugar making would not have amounted to three millions of dollars.

There is a mine of economic suggestion in these facts, which we prefer that the reader should develop for himself.—*N. Y. Tribune.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

LARGE CROPS.

By David Rice, M. D.

ALMOST every ambitious and enterprising farmer feels a kind of honest pride in raising upon his premises what he styles "an extraordinary crop," or "a very large crop." This practice should be encouraged. Bring out the large crops, ye men of the soil! It shall be one of the crowning glories of your noble vocation. Literary men exult in having originated a "great thought;" this is well, but we must have food for the *body* as well as for the *mind*. "The house we live in must be cared for, as well as its immortal tenant. So give us the large crop farmers.

I do not encourage you to try to raise large crops, regardless of expense—extravagance in labor, lands, manures, etc.; no, but with an eye on the true principles of economy in regard to all these; study to produce with the least possible expense the best, the most excellent crop. Our New-England lands are capable of doing greater things than they have credit for. The Great West, is just now attracting much attention, as the styled "Garden of the World;" but when my neighbors are raising ninety-five bushels of Indian corn, twenty-five of wheat and seventy-six of oats to the acre, my faith in the superiority of the "Western Garden" is somewhat shaken I must confess.

It may require more labor, and ingenuity in the application of agricultural skill, and in the invention and apportioning of manures, here in New-England, in order to raise as large crops as our Western neighbors; but the crops will pay, and more than doubly reward every economical outlay—thus compensating and *honoring* the producer.

Strive to raise large crops then, in the blessed and healthful East, where no miasmatic vapors chill the blood, and where "yellow melancholy" seldom lays her blighting hand upon the heart!

I am not desirous of underrating the value of the Western world, nor her character, nor her prolific soil, nor the healthfulness of her climate; but I want New-England and her agriculturists to stand in the *right place*, and to have their dues.

It is for this reason that I urge upon New-England agriculturists not to undervalue the worth nor the powers of New-England soil; but by skillful agriculture to enter into laudable competition with

their Western brothers, in the production of large and valuable crops, that may fully compensate them for every outlay, and yield a satisfactory profit besides. What are some of the benefits that will arise by thus endeavoring to raise large crops?

In the first place, if successful, the farmer will be the possessor of the large crop itself—a motive in itself worthy of encouraging the effort.

Again, he will have the benefit of his experience, and experiments, in selecting and preparing land—in manuring and planting, also in seeding and harvesting. He will learn how to adapt the crop to the particular piece of land most fit for it—how to prepare, with the least expense, the most valuable and fertilizing manures. He will find that "*Home-made manures*" may be made more economical than imported manures. He will learn what kind of manure each crop requires, and when and how to apply. His inventive genius may bring to his aid new labor-saving machines. He will learn to do every thing in the right time and in the right way. Method will be one of his watch-words and Economy the other. Not entirely contented with his own experiments and experience, he will strive to learn from his neighbors, from agricultural periodicals and from books. In a word, the endeavor to raise large crops makes the farmer a student of nature, a philosopher and a chemist; a learner from the great book of Nature, and a shareholder in her bank stock—the surest and most reliable bank stock in the world!

Seed time has come; the season for ploughing, manuring and nurturing the young crop. Remember "where there is a will there is a way." "*Will it*," and the golden stores of Autumn shall crown your efforts with her abundance, and you shall go forth rejoicing, bearing your sheaves with you. You will have learned that yours has been the lot of illustrating, by actual and profitable experiment, the grand and beautiful principle of "making two spires of grass to grow where only one grew before.

LEVRETT, April 10th.

A CHANGE FOR THE BETTER.

THERE is a tract of the town of Wilbraham on which the farmers of the last generation could not obtain a living, though they seemed willing to live poorly. They did not even raise the rye which they ate. This they obtained by going to other parts of the town, reaping rye by the day, and taking their pay in the grain which they reaped. Now that tract is occupied by some of the wealthiest farmers in the town, and they have made their money from the soil which they occupy. That soil *now* grows *rye*—and it grows anything else that grows in the town. I need not tell you that the present occupants of that tract of country have been active members of your society

from its commencement. I am informed that twenty-five years ago, two thirds of the farms of Ludlow did not pay the current expenses of their occupants, and their expenses then were not so great as the current expenses of the occupants now, but instead of the heavy mortgages that then existed, now there is money to let. What is the cause of the change? Cause, sirs, there is cause enough. Beside the temperance reformation, to which no doubt they owe something, a flood of light and knowledge has been poured in upon them from the agricultural press and from agricultural fairs. And if any are there who do not take the papers, and who do not attend the fairs, still, the light from their neighbors' farms has shone in upon them, and dispelled the darkness in which they would willingly grope.—*Prof. Marcy's Address before the Hampden Co. Ag. Society at Springfield, Mass.*

COMPOST FOR POTATOES.

THE following from the *Country Gentleman* is confirmatory of views we have often expressed, and which we are desirous of urging at this season. On land naturally sweet, not over rich, and not treated to large quantities of stimulating manure, there is very little danger of the potato disease if this application is made. The precise proportions here indicated we do not suppose to be important. It is enough that a handful of compost, consisting mostly of ashes, with a less quantity of lime and plaster, be applied to the hill. The more it is mixed with the soil the better, as it sometimes prevents the seed from sprouting if concentrated immediately under it. The *Country Gentleman* says:

During the present winter, a friend of mine furnished me with a prescription to prevent the potato disease. He said that the gentleman who gave it to him had made a thorough trial of it, and had found it to be efficacious in every instance in which he had applied it. It is composed of ashes, plaster of paris and lime, mixed in the following proportions:

1 bushel ashes,
1-2 do. plaster of paris,
1-4 do. lime (slacked),

mixed thoroughly together before using, and applied to the crop by putting a handful of the mixture in each hill when the potato is planted. It will be seen at once that the ingredients of which this mixture is composed, are all valuable as manure, and they can all be obtained in almost every part of the country without much expense or trouble; and wherever applied it must be beneficial to the crop and soil as a manure, if it fails to prevent the potato from rotting. As the season for planting potatoes will soon arrive, I intend to make a thorough trial of this prescription, and I would also propose to the readers of the *Country Gentleman* in various parts of the country, to do the same, and after the crop is harvested to furnish the publishers of this paper with a statement of the results of their respective trials—also

any other successful experiments in relation to the same subject which may seem to be reliable and likely to be beneficial in the cultivation of this crop.—C. T. Alvord, Wilmington, Vt.

QUESTIONS AND ANSWERS.

"Does the King Philip, or brown corn, maintain its high reputation, and where can the seed be procured?" We are not quite sure whether the King Philip corn is as good as was thought by many a year ago. In our opinion the large Canada corn (12 to 20 rowed) is so good for very northern latitudes, and the Dutton (8 rowed, large, long ears, early ripening) so good for latitudes a little farther South, as Massachusetts and New-York, that better kinds for these regions would be hard to find. It is well enough to try other varieties. The seed of the King Philip is for sale at R. L. Allen's, Water street, near Fulton, New-York, and we presume at most seed stores.

"I have a plot of ground 20 feet by 5, in which I wish to start an asparagus bed. Can you give me any hints?" Trench the ground two feet deep. Fill six inches with old boots and shoes, parings from the shoe shop, old woolen rags, bones broken into small pieces, hair, bristles, waste locks of wool, anything that will require a very long time to decay. On these put a sprinkling of well-rotted manure, then a sprinkling of top soil, and so alternately till you have filled another six inches. Fill the next six inches in much the same way, but let there be more of the manure than of the soil. It would be well to fill the next three inches wholly with black, well-decomposed manure; and the last three wholly with top soil. Be careful that there be no seeds in the manure or top soil. If you are short for such manure as we have described, a rich and pretty thoroughly decomposed leaf mold from the woods might be substituted for a part of the manure. An asparagus bed must be very rich, and there should be matters near the bottom that will last at least twenty years, such as leather clippings, woolen rags, bones, hairs, hoofs, etc. The whole of the first foot might be filled with these things if you have plenty of them. Let the surface be only on a level with the general surface, as you will raise it by the addition of manure each fall, only a part of which should be taken off the following spring. If you buy your plants, buy them of some honest seedsman who will furnish the variety you demand. But you may about as well get either the plants or the seeds of some neighbor who has better asparagus than you have seen elsewhere. If you plant instead of setting, the first year's growth will be but small; and it will not be best to cut for use the second year; but the third year you may have a fair crop; and

then a larger one for twenty years in succession; only cover the bed with manure each fall, some 3 or 4 inches thick, and remove about half in the spring, and fork in the rest. It is well to put a peck of salt on such a bed in the spring, as it nearly or quite overcomes the weeds, and if it does not benefit the asparagus, it certainly does not injure it.

INDIAN CORN.

THE following, from a report on corn culture, by J. M. Merrick, of the Berkshire (Mass.) Agricultural Society, suggests more truth on that important subject than we recollect to have seen condensed into so small a space:

"We are happy to observe that the spirit of improvement noticeable in other departments of agriculture has reached the cultivation of corn; that more inquiries are made as to the best methods of proceeding; that greater attention is paid to the selection of seed—a very important point, and one that hitherto has been much neglected; that the relative values of different varieties are carefully considered; that manure is more generally spread and ploughed in, while the quantity is increased and the quality improved; that high hilling is more discountenanced; that frequent stirring of the land by the cultivator and hoe is believed to be the surest preventive against the effects of long-continued drought; and that the old prejudice in favor of the widest distance between the rows is abating. The consequence is, that greater crops are raised from the same extent of land, and the question of profitableness is brought nearer to a definite solution. Some of the most rigidly conservative farmers admit that probably the highest results are not yet attained, and that the time may come when, with better knowledge applied to the culture of corn, eighty bushels may be grown upon the acre that now yields forty or fifty. It will then be found that no more profitable field crop is raised in New-England."

Taking the foregoing as our text, and begging that the reader will remember the text, even if he forgets the sermon, and assuring him that the text is good, however the sermon may be, we will comment briefly upon it.

1. "The spirit of improvement noticeable in other departments of agriculture has reached the cultivation of corn." It is strange but true, that this did not happen sooner. Indian corn has had more than three centuries to win the esteem of mankind; yet of all the nations whose climate favors its growth, not one yet fully realizes its value; and of all the nations that are unable fully to supply their own bread, or the materials to fatten their meats, not one yet imports as much Indian corn as would be for its interest. Every corn-growing country will yet produce more, and every non-corn-growing country will import more. See, you who live a few years, if it is not so.

2. "More inquiries are made as to the best methods of proceeding." Better late than never. Why did our fathers make themselves the extra labor of putting manure in the hills, instead of ploughing it in on warm lands, harrowing in on those not so warm, and distributing in the hill only on the cold and backward? Why did they, and why do too many of us, hill their corn half way up to the moon, for no good purpose? Why have we been cultivating good corn land at only a few dollars profit per acre? It has been for the want of more inquiries after the best methods. A little earnest inquiry, a few accurate observations, a careful mark of the measure of success under different methods, would long ago have diminished the labor and increased the produce.

Thousands of hard working men have expended more labor to grow a hundred bushels of corn on four acres than would have sufficed to grow it on two.

3. "Greater attention is paid to the selection of seed." For the extreme North, the yellow, Canada corn, is good. The kind we mean has from twelve to twenty rows on the ear; the ears are about eight inches long; under good cultivation, two mature on a stalk; the kernals are close and deep, leaving a very small cob; the shelled corn equals two bushels for three of ears; and the yield is from fifty to one hundred bushels of shelled corn per acre, if the cultivation is good.

For a tier of States a little removed from our Northern frontier, including Rhode Island, Massachusetts, Connecticut, Middle and Southern New-York, Southern Michigan, Northern Ohio, and so on towards the Pacific, we can conceive of nothing superior to the Dutton corn. Its ears are about a foot in length; its rows, eight; kernals large, with no space between; color, deep yellow, inclining to red; yield just about one bushel of shelled corn to two bushels of ears.

Still farther South, larger kinds will commend themselves. Whatever variety is preferred, much will be gained by selecting the most perfect and the earliest ripe ears for seed. Seed corn is often kept over winter in heated rooms; and it is certain that no great evil results from such a course; but we can hardly resist the belief that it will sprout a little more vigorously if kept in a dry, but cool place; for we presume that the less changes of temperature a seed undergoes, the greater its vitality. Wheat from an Egyptian sarcophagus will germinate after 3000 years; and we presume that a kernal of corn would, after 10,000 years, if it could be kept all that time dry and at a temperature of 33°; whereas, if the temperature and the degree of moisture were often changed, it might loose a considerable part of its vitality in less than one year; and as there is no difficulty in preserving seed corn dry and cool, we would so preserve it.

4. "Manure is more generally spread and ploughed in." On dry, warm land, this should always be done. On land of but medium warmth and forwardness, it may be better to plough in a large part of the manure, and to put the remainder in the hill, especially in Northern districts, where a too short summer and an early frost is feared. On very cold lands it may be well to deposit the whole in the hill, for the sake of procuring an early start, though we doubt it. Corn, if the ground be properly mellowed, is willing to reach far for its pabulum. The manure benefits the corn most when most evenly incorporated with the whole soil, except in so far as its object is to procure an early germination. This, it is true, is important, since the nature of the corn plant is to grow rapidly from the first, or to receive a stint, from which it does not easily recover. Much judgment on the part of the husbandman is requisite, in order to administer best to its early thrift, and at the same time to provide for its continued growth and rich maturity.

5. "While the quantity is increased and the quality improved." That is quite possible. Ten loads of barn manure, composted with ten loads of well-cured swamp muck, with some ashes, shell lime, and a little plaster, will give as good a crop of corn as twenty loads of barn manure, and leave the ground just about as well prepared for a future crop. There is probably more gained by

composting manure for Indian corn than for any other crop; and one reason of this, we apprehend, is that when composted, it mingles more perfectly with the soil, not being buried in lumps, but permeating the whole mass, and thus diffusing pabulum for the roots in every part.

6. "High hilling is more discountenanced." If the soil is properly loosened to a depth of six or eight inches, no hilling is necessary. Perfectly flat cultivation is better for the crop. If the corn is to be followed by clover, it is desirable for the sake of a smooth surface. On heavy, clay lands, high hilling may possibly be of service; but the instances, we believe, are rare, in which it would not be the wiser course to thorough drain such lands, so that the corn should not require hilling before planting corn on them. On all feasible soils in good tilth, mellowed up to a sufficient depth, the only apology for hilling corn is, that it is a little easier to cover the weeds about the hill than to dispose of them otherwise, and so labor is saved, and that without special injury, except where the ground is to be seeded at the last dressing of the corn, in which case even a moderate hilling is objectionable.

7. "Frequent stirring of the land by the cultivator and hoe is the surest preventive against the effects of long continued drouth." It is so; and if the ground was mellowed to a good depth by previous cultivation, it is a sufficient remedy. Merely stirring the surface-soil, if the sub-soil is nearly impervious to air and water, will not suffice. The downward tendency of rain-water is reversed after long evaporation from the surface; the water that had sunk 10, 12, or 14 inches, is returned towards the surface; it comes up impregnated with the salts of the sub-soil; it brings up food for the corn from below where its roots penetrate; but the readiness with which it does this, and the quantity of plant-food which it brings up, depend very much upon the depth of the previous cultivation.

8. "Old prejudice in favor of the widest distance between the rows is abating." We do not exactly understand this, and so we will give our own views. *Very close planting only adds to the labor without increasing the crop.* Here many, perhaps a majority, will oppose us; but we have our own views, and here they are.—If you plant a very small variety of corn, you may get a larger crop by planting as thickly as three feet each way. If you plant a little larger variety, three and a half feet may be a suitable distance. And if your ground is very hard to till, but a strong soil and richly manured, it may be advisable to plant nearer than four feet. But if your corn is of such a variety as is most profitable to grow in the Middle States, and if your ground is feasible, four feet is near enough. We do not say without much experience and the most careful observation, but *with these*, and *most confidently*, that four is our favorite number:—rows *four* feet apart, hills *four* feet in the row, *four* stalks in the hill, and within *four* inches of each other. Our rule goes on all farms." But with a medium variety, it will give a return of more shelled corn than thicker planting, and will require less labor. With large varieties, such as are cultivated south of the Middle States, we presume a greater distance would be preferable; but of this we are not so confident.

We will not follow our author further; but will beg the reader to turn back and review his concluding remarks on the increase and profitableness of the

corn crop. The ground for this crop, we repeat from a former number, should be kept loose and clean through May and June and the early part of July; but this should suffice; and we insist that after the ground has become filled with corn roots, *it should be let alone.* We would almost as soon drive a herd of wild buffalo over our broods of chickens, as drive a plough through our corn roots late in July or in August. Weeds can create no necessity for it if the ground has been cultivated as it should have been, previously.

We quite agree with Mr. Merrick, that no more profitable crop can be raised in New-England; and we think the same remark applies with equal truth to large portions, if not to the whole of the United States. N.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

SHELTERING LANDS.

The past winter has been full in the experiences of a severity of cold. December and January were marked not only by an unusual low degree of temperature, but of a uniformity which is seldom noted. February was as remarkable for unnatural mildness and April like character as the two former months were for their unrelaxed peculiarities. March, up to the middle of the month, was all that a rude, stormy, blustering March could be imagined to be. So the winter, like all past winters, has given us cold and storms, differing only in the facts that its cold was more intense than usual, and its storms more boisterous, and taking February into account, its features have marked extremes seldom realized.

The effect of these atmospheric extremes upon man and his beasts, have to some extent become understood, and have been counteracted by providing better buildings, and these in more sheltered positions, to give protection from the inclemencies which have, for a few seasons, been extending over a wider range of our country. So far as the limited extent of these improvements permits, a noble end is gained, whose advantages must be fully appreciated. But there is yet a point to be gained, beyond the erection of a building, which, in a few years, must yield to the workings of decay; and, unless prompt measures are taken to prevent, become more or less open to searching winds, and the storms they herald. Even where such buildings are erected, and it may be supposed will remain in perfect order through time to come, how it is the case that animals can not pass beyond the limits of the buildings without meeting the influence of searching winds, rendered still more penetrating in contrast with the kind shelter from which they came. Every person of common experience knows well the liabilities *to take cold* from going from a comfortable room to the open air, without the protection of additional clothing. That the same exposure awaits animals in being turned from a warm shelter into severe cold, no one has cause to doubt. To remedy this evil then, is an object worthy of attainment.

The influence of trees in breaking winds, and mitigating the severity of storms, is too well understood to require an argument in its behalf. Every observing person has experienced it in passing from the open fields to the grove that skirts its margin. And who has not seen how evenly the snows often lie on the sheltered sides of such groves, when away from their influence, perhaps

but a few feet, it is driven away as by a whirlwind, and the ground left bare to the desolating blasts of winter. As a question of comfort then, and consequently of economy, it is clear that the protection of grounds and buildings by trees is fully practical, calculated to give a full return for the use of land they occupy, and the labor of planting when they do not already exist.

We are aware that objections will arise, with some, to having these surroundings of trees. "They hide the prospect." This may to some extent be the case, but need not be so altogether. Here and there a sufficient opening may be made, to make the prospect all the more enchanting. But if not, what has a *distant* prospect to do with the quiet and *comfort* of the farmer's home. The tree will occupy just so many rods of good land. Granted; we like good land for trees. Their additional growth in consequence, will give so much better *per cent*, which is the main point of most farmers. And then, we verily believe that the land sheltered by the trees, will produce more than is gained from it, and the land they occupy previous to their growth, in consequence of the protection they give, to say nothing of the comfort of the men and animals that claim a share in the shelter. Here, then, we have the growth of trees a clear gain. Then comes up the labor of transplanting to form the belt, which must be estimated according to facilities, but can not be very expensive, even if trees are purchased from the nurseries, at present prices; but can be cheaper done if a contribution is levied on old fields, woods, or swamps; and lastly, it will take so long for them to grow. Alas! how many who have admired trees, professedly "wished they had them around their buildings, and would set them out, if it did not take for ever for them to come to anything," have sung the same song, when if they had gone to work, spade in hand, when they pitched this tune of lamentation, might now have seen long rows of tall and beautiful trees of their own planting out. A few years in the growth of a tree shows almost a miracle. Yours truly, W. Bacon.

Richmond, Mass., March 17, 1857.

The above should have gone into our last number. Then was the time to set shade trees. But, reader, if your premises are bald of trees, do not let May go by without setting a few. Set more next fall; and do not fail to mark our friend Bacon's article to be revised when another April comes.

PROTECTION AGAINST INSECTS.

Mr. Editor:—It has long been evident that some more efficient method of protection against the ravages of the insect tribes than those now in use, ought to be adopted. Man has not begun to enter into his rightful dominion over "every creeping thing that creepeth upon the earth." The armies of these ungoverned subjects swarm over our fields and fill our houses; they quarter themselves upon us at will; they make their forays into every province of the vegetable kingdom. And we look on, for the most part, in the utter helplessness of an idle and stupid wonder.

Clearly, something ought to be done. Nor is it difficult to say what. The course recently entered upon in New-York, is the one which I have often urged as alone offering the promise of any security; that is, the appointment of one

or more *competent persons, whose exclusive business it shall be to watch the movements of these creatures, and devise means of defense against them.*

There are many reasons why this can never be well done by ordinary observers. The diminutive size, the changing form, the sudden appearance, the rapid work, and above all, the great variety of countless numbers of these depredators, make the endeavor hopeless. We must have close and continued observation; we must have careful, connected, systematic, intelligent experiments; in short, we must have *organization*.

It is not to be denied that any farmer may make himself somewhat familiar with the character and habits of insects. He ought to do so. And the more knowledge he gets, the more fully he will be convinced of the necessity which has been referred to. He may be able to coöperate advantageously with the professional observers, but he can not do without them.

As a matter of fact, it is doubtful if a majority of our farmers can recognize the form even of one fiftieth of the insects that prey upon their crops. Some time since an intelligent gentleman pointed me to a row of apple trees, which he said were being ruined by the dry weather, or perhaps they had a "*blight*," (a very common and ready generalization); the trees were in truth nearly destroyed by the "leaf hoppers," an animal of whose existence my friend had not the slightest notion. Instances similar to this might be given, without limit. But not to insist on them, it is clear that the most intelligent of the cultivators of the soil must find themselves laboring at an immense disadvantage, when they attempt the destruction of these Protean enemies.

They will discover the need of a division and a skillful direction of labors, and of a careful collection of experience, such as can be had only through the institution of a general and comprehensive scheme of superintendence. The agricultural interest requires nothing more urgently than this. C. B. R.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PLANTING—FARMING—HOW MUCH LAND?

MARCH 12, 1857.

FRIEND NASH:—I have just read your remarks pp. 464, 465, and am so highly pleased, that I beg to tender to you my thanks. There is a stereotype phrase,—"too much land," that goes the rounds, and though all admit that any one may have "too much land," yet it is used by the mass without thinking of its true meaning. It is not always good policy to make land produce to its utmost capacity, simply because it will "cost more than it comes to," like the "whistle" that Dr. Franklin wrote about. If a planter can keep up his present acres to a production highly remunerative, why should we say he had "too much land?" But, if his acres be much fewer, yet growing less year after year, we must admit *he* has "too much land." Land ought to improve; but if now fertile, and kept at that figure, under a system that promises to keep land so for twenty-five or fifty years, we should be well satisfied and bid the owner good-speed. This "too much land" talk is rather too much like school-boy days for me, with some ten to twenty boys in a class for months and years, the dull and stupid acting as a clog on the talented, until the latter become as lazy, mischievous, and

worthless as the former. No, Sir, let us encourage the farmer with brain to plan and hand to execute. I have noticed carefully in our great S. W. the difference among men. Why, Sir, there are men here who are just as competent to manage the planting interest—which turns out 1000 to 5000 bales—as other men are fit to go to mill with a bag of corn. We have men here who began the world depending upon themselves; no fortune left them, nor had their fathers a "two story house,"—(I hope Mr. Spencer will give Mr. Yeomans another)—who now ship crops worth $40,000 to $100,000 per year; and they began on a few acres. A man of mind, business tact, observation and energy, certainly ought to improve in his ability to manage a farm. When he starts in the world, he may manage say 3 to 10 acres to the laborer, and not well at that; ere he is thirty, he certainly has improved; and if the right man, when at fifty, has gained even more.

Many thinking men even, do not estimate, in my judgment, properly, as to farming as they do in manufactures. The same expense of food, clothing, necessary and artificial, is required for the acre when he manages 100 acres, as it does when he manages 1000; and if he has *mind* and BODY and WILL competent to manage *as well* 1000 acres as he can 100, the body politic saves by this; and that there are men competent so to do, I doubt not, for I see rich men in the army, navy, navy-yard, factories, behind the counter, in the office, and pray why not in the field? Are we, the farmers, the only fools? Is our business the only one that has no need of mind? Farmers themselves, injure themselves. As for me and my calling, I shall hold it far above the pill-box, or the green bag, or the stump, and will acknowledge no calling superior, save one—the holy calling, seeking out lost souls. No, Sir, I would to-day prefer being the best planter or farmer in Mississippi to being Governor. So, as to the Presidency; for as I regard it, there is more mind, more talent, more varied learning, and a greater field for exercising them, than in the chair of state.

I mean not to disparage any. "Not that I love Cæsar less, but that I love Rome more." Yours truly, P.

Probably some will regard the closing expressions of the above, relative to the farmer and the President, as a little enthusiastic. Well enthusiasm is a good thing. We wish there were more of it among our farmers. Our correspondent seems to think that a farmer should be more capable at thirty than at the outset of life, and still more capable at fifty. Is not the reverse of this too often true? We hear of ministers "growing" in the estimation of their people, of lawyers "growing" in the estimation of the court, of doctors "growing" in the estimation of everybody. Now we will not say that there are no "growing" farmers among us. There are. There are many. Some of them are unfortunately "growing" the wrong way, and we believe it is so in all professions; but others are "growing" the right way; and the proofs are all about us that they are "growing" prodigiously fast. Too many farmers have the idea ingrained into them, that the farmer can not be much if he would. So long as they hold this opinion, it will be too true, of themselves, at least; but do not let them instill such an absurdity into the heads of their sons. The truth is, the farmer *can* be something, if he *will;*—he can be a *good man*, and that is more than half of what anybody ever was or ever will be. But more;—he can be *knowing*, enriched

with a vast amount of *useful knowledge*, and that is two thirds of all the rest of what anybody can be. Still more, he can make his worth and his talents known. Notoriety is not worth living for, but so far as it is worth anything, the farmer can have his fair proportion of it; if not as much as the stump politician or the State-prison-bird, yet of a better quality, and on the whole about as desirable as that of any other calling. Yes, yes, the farmer can be a good citizen, a knowing man, pretty extensively appreciated as such. There's for you, farmers, and what do you want more? Only seize the God-given benefits of your profession, and, as our correspondent intimates, you need not much envy the President of the Union, or the Governors of the States. N.

Horticultural.

THE GARDEN.

Our first parents were placed in a garden "to dress and to keep it." The tired denizens of the city have no garden. What a drawback upon the pleasures of life—its most innocent pleasures, its combined utilities and beauties. Vegetables always fresh, blooming flowers, maturing fruits, songs that come unasked, thrilling upon the ear, sweet sunshine, cooling shade, delicious purity after the rain storm, the cooings of the doves and the loves of the household, all have a place in the garden; all may be purchased for a little forethought and a little pleasant labor. Who, that can, would not pay the price? Next to the folly of thousands, hurrying, jostling, crowding, squeezing through moving accumulations of humanity, running against, if not over each other, in the city, is the folly of those who live in the country, and yet do not have a profitable, fruitful, pleasure-provoking, beautiful garden. Reader, we suppose you have such a garden, one that will add to your pleasure and your wealth, to your moral elevation and your social enjoyment, to your self-esteem, and to the estimation in which others will hold you. If you have not, we hope you will have by another year; and although this is not the appropriate field of our labor, we will give you hints from time to time which may be a help to you. Attempt something liberal. No stingy patch is enough. Let the food for your family come largely from the garden. If you are a mechanic and have but little land, make that little food-giving and beautiful. A little garden is a great deal better than none. Let the farmer have a large one. Labor in the garden is at least as profitable as in the field. All the beauty and loveliness you create is so much extra profit over that of the farm at large. Yes, be liberal in laying off your garden; cultivate more of the good

and beautiful things, roots, fruits and flowers than you want; give some of them to your neighbors who have no gardens; nothing will afford you a more exquisite pleasure; it will cure some of your selfishness; really it will make you a better man or woman; our word for it. N.

CULTIVATION OF THE STRAWBERRY.

At a recent meeting of the Farmers' Club at Concord, Massachusetts, the following remarks on the cultivation of the strawberry were delivered by John B. Moore:

"I have tried various modes, single rows, beds and hills, but were I now intending to grow them to any extent, I should adopt the following method: In April or May, having the land ploughed and harrowed fine, work in manure enough to last two years, and proceed to plant in rows three feet apart; then sow between each row a row of turnip-beets or some other vegetables that the crop could be gathered in August; keep the ground free from weeds, allowing the plants to spread as much as they please.

"The next spring, as soon as the land is dry enough to work, spade over the ground one foot wide where the rows of beets stood, which will leave the beds of strawberries two feet wide, the space of one foot which was dug over, making the path; then thin the plants where too thick. About the first week in June, mulch the paths with fresh cut grass, when every thing is done but gathering and marketing the crop. After they are all gathered, which will be from the 5th to the 10th of July, put on a dressing of manure, and plough with a sod plough, turn over smoothly, sow with rutabaga, or corn, or oats for fodder. My reasons for this course are the following: The first year the crop of vegetables between the rows will pay the expenses, and the strawberries are easily managed and very certain to leave the ground well stocked with plants; the second year you will get a full crop without much labor and little annoyance from weeds; if you undertake to weed out the bed and continue it another year, you will have an almost endless job of weeding in a very busy time of the year, and if you should go to the trouble, your crop will be much smaller than the first year. By following this plan I think they can be produced much cheaper than otherwise."—*New-England Farmer.*

TRANSPLANTING.

In setting out trees, all the soil should be removed for two feet in depth, and four or five feet in breadth. Then below this, the subsoil should be loosened as much as possible to the depth of another foot, so that the roots may easily penetrate the earth.

The whole border should then be filled with surface earth, if it be an ornamental tree. We have never found any thing equal to broken bones as a part of the borders of fruit trees. They do not stimulate to so great a growth of wood as some other manures that furnish ammonia in larger quantities, but they give a steady and uniform growth for many years, and induce long continued fruitfulness.—*Jeff. Democrat.*

CANTELOPES AND WATERMELONS.

CANTELOPES can be raised with all the certainty of the cucumber and the pumpkin. They require a little more care in preparing and selecting the ground. A sandy loam is always to be preferred; but any light, friable soil, with a southern exposure, free from prevailing moisture, will answer. The ground should be converted into a fine tilth—the hills should be dug out to a depth of eight or ten inches, eighteen inches in diameter, which should be filled with one third well-rotted short manure, one third good sand, (should the soil not possess any,) and one third rich earth, well mixed. The hills should be from eight to twelve feet apart each way, as room may allow, and the seed, say five to a hill, should be planted over the whole hill, an inch below the surface. When the sprouts are two inches high, give them a fair sprinkling of wood ashes, while the dew is on, or after watering them, and repeat three or four times during the two following weeks. This will drive away the insects. When they are six inches high, remove all but two or three vines, according to the space between the rows, and carefully put *round*, not *to*, the vines, a little guano. In removing the weeds from the beds, the vines should not be disturbed, as the rootlets which penetrate the earth from the vines and which supply the principal nourishment to the fruit, will be destroyed. Nothing more is needed to yield an amount of this delicious melon that will astonish the uninitiated, and of a quality *unequaled* by the best productions of Jersey.

Watermelons require exactly the same treatment, but the crop is not as certain as the cantelope. Still, if a light, friable, sandy soil, with a south-eastern exposure, is selected, and the Mountain Sweet variety is planted, a fair crop may almost certainly be counted on. We have raised twenty-one edible watermelons from three hills. The Orange watermelon is very luscious, and we think requires a rather shorter season than others, and produces abundantly.—*Germantown Telegraph.*

CULTIVATING YOUNG TREES.

FRIEND HARRIS:—The most perfect tree can be raised from planting the seed on level land, with soil of equal fertility all around it, because trees, like most other things, lean to the source from whence they derive their nourishment. In exposed situations, trees lean from the prevailing winds of the country, and should have more nourishment applied to the roots next to the prevailing winds, to counteract their influence.

The reason why a tree bends to a pile of manure on one side of it, is that it makes wood faster on that side, and the heart of the tree is soon nearer one side than the other. It is a notorious fact that all timber springs *from* the heart, as all hewers know, and when one side gets thicker and stronger than the other, it bends the tree towards the thick side. Trees attain size faster without trimming than with. And I have never been able to discover any advantage in pruning fruit trees, except sometimes when forks occur low down, and if allowed to grow would split apart and ruin the tree.

Persons wishing to set out orchards had better set out trees at one year old, than wait for them to get slim in the nursery; they are checked less by removal, and will become profitable sooner. It has been thought that fruit trees ought to be six or eight feet high without a limb, but experience has satisfied me that it is better to let young trees branch as low as they will. A person can gather twice as much fruit standing on the ground, as he can creeping about on a ladder twenty feet long. A short body is able to sustain more fruit than a long one of the same size. Besides, low limbs prevent the formation of a sod under the tree. All young trees should be manured and cultivated as carefully as vegetables.—MICAJAH T. JOHNSON, *in Ohio Cultivator.*

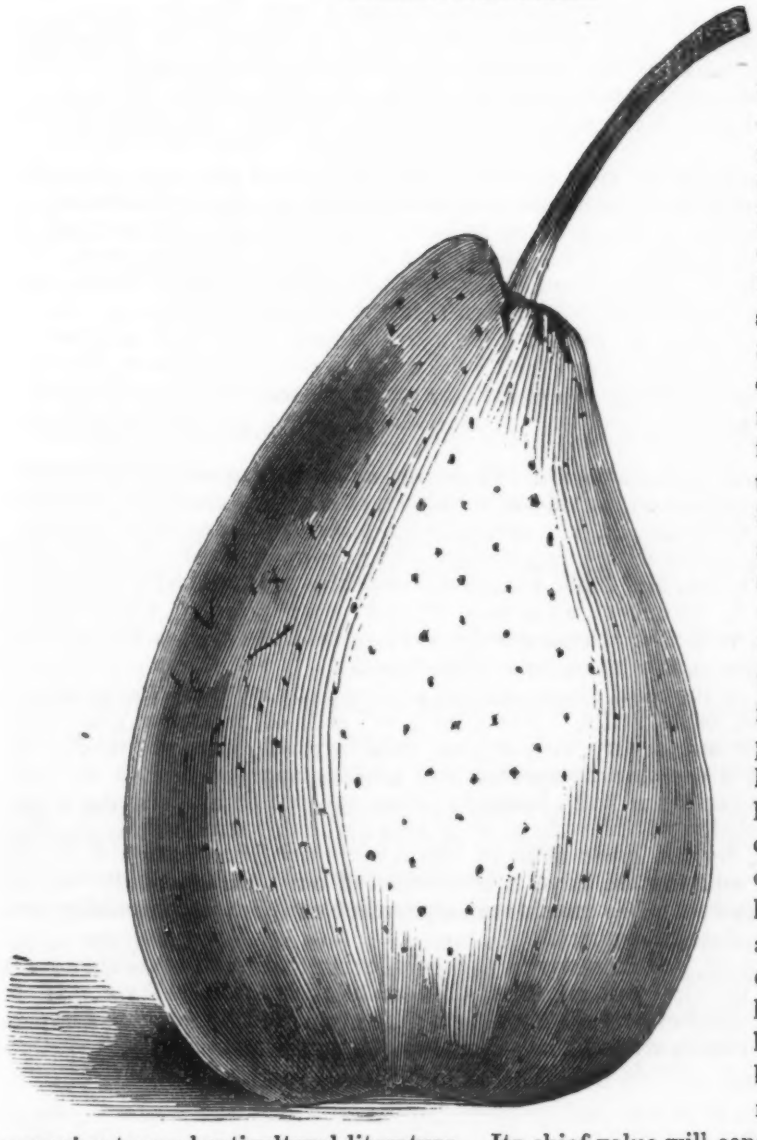
EXERCISE FOR WOMEN.

WORK in the garden, with thick shoes, substantial mitts, and a sun-bonnet rather wider than the present fashion, is a health-giving and beauty-creating employment for woman. Think of this, ye mothers and daughters. Riding on horseback is an exercise in which all women in the country, and as many as possible in the city, should be adepts; and if these two things are not more attended to among us than they have been, then the days in which American women will be regarded as peculiarly beautiful are waning. More of this another time. N.

THE FLOWER GARDEN.—Propagate and set out dahlias—plant the seeds of all hardy annuals—mulch your roses with a thick layer of leaves from the hollows of the woods, sprinkling a little soil over the mulching to keep the wind from blowing it away—transplant evergreens of all kinds now, just as the new birth is commencing—the only proper time. Clean up and roll your gravel walks—dress your borders—tie up all herbaceous flowering plants to stakes of cypress or China tree wood, and put everything in trim for the season. —*Southern Cultivator.*

☞ FRIEND, are those trees set out, that we spoke of last month? If not, it is yet in time. Just look about your premises and see where you would like it, if there were now a pretty well grown tree; and then *calculate*, that if you now set one, it will be well grown in a few years. The retired merchant, who wishes suddenly to convert his country-seat into a sort of Paradise, has heaps of money to expend. The surveyor, the landscape gardener, and all the rest are ready to give plenty of good advice to be well paid for. His workmen expect a great deal of money for a little labor. It is a *bleeding* business. But the farmer can make his home beautiful, and nobody can *bleed* him in the operation. He has only to take time beforehand, to look ahead and see that a full-grown tree would be beautiful here and another there, here a large forest tree and there a small one, here a lilac and there a clump of roses, and then transplant accordingly. N.

HORTICULTURAL.



We are receiving in advance the sheets of a forthcoming work on the Pear, by Wm. H. Starr, Esq., of Norwich, Ct. It is to embrace a description of 32 varieties, the choicest and the most valuable for general cultivation. Mr. Starr is an amateur; is enthusiastic, is fully "read up" on the subject; and what is more, is eminently a practical man—has done in this line what he recommends others to do, and knows well by actual experience whereof he affirms. In his book may be anticipated a most valuable accession to our horticultural literature. Its chief value will consist in its plain, reliable instruction, suited to all classes of cultivators, as well the experienced horticulturist as the farmer who would grow choice fruits for his own use. But beyond this, it is to be one of the most elegantly illustrated books of the age. Of thirty-two engravings of as many varieties of pears, there is not one but will make the eye sparkle and the mouth water. All who have land, little or much, will want this work for its practical value; and those who have not, will want it for its artistic beauty. If upper-tendom does not seize upon the first editions, and leave those of us, who have less money, to get a copy when we can, it will only show, as a great many other things do, that there are as many fools in high as in low life. As a sample of Mr. Starr's style (our engraving fails to be a sample of his illustrations, because it is not colored) we give the following from his introduction :

Horticulture is an employment that commends itself to every class in the community. To the man of wealth, and those in the common walks of life—to individuals of the highest intelligence and those of more humble capacity—to the young and the more advanced in years, it is equally and pleasingly adapted. It is a most healthy, delightful and interesting employment. While affording agreeable and profitable exercise for the mental and physical powers, it is equally conducive to the sustenance, the health, and the enjoyment of our fellow-men.

The employment of the fruit grower is one which is of the most elevating and ennobling character. He becomes delightfully enthusiastic in his avocation. A pleasure unknown to others takes possession of his mind. As he watches progressively the opening germ, the tender shoot, the growing stock, the spreading branch, the swelling bud, the expanding leaf, the blushing flower, and the ripening fruit, until in all its rich development of golden or crimson tint, it blushes in the sunbeam; his heart is filled with pleasing wonder and admiration, and his mind will instinctively revert to the great Creator, "and look through nature up to nature's God." He can not be an ardent and enthusiastic admirer of the beautiful and the bounteous productions of nature, and not be *a better man.*

It is not important that a man should possess extensive grounds or multiplied acres. It is not requisite that his soil should be of a certain character or a particular chemical analysis. In a country so extensive and diversified as ours, and with a climate embracing every variety, from the sunny south, to the hoary icebergs of the north, and having such an extensive and almost exhaustless variety of fruits at command, admitting of every description of temperature, soil and culture, very few, comparatively, need excuse themselves for not improving their taste in this interesting department.

The occupant of the most circumscribed garden-plot may enjoy the luxury of growing his own table fruits. Every inch of soil, of whatever quality or strength, whether wet or dry, rich or poor, sand or muck, loam or gravel, may be modified, and if necessary, improved and usefully appropriated to the production of some variety of fruit, beautiful to the eye and delicious to the taste.

With a knowledge of these facts, it is strange that comparatively so little importance has, by the great mass of the community, been attached to the culture of fruit, and that so large a proportion of our citizens are still willing to deprive themselves of so much real enjoyment as this truly ennobling employment is calculated to impart.

But this is not all, and to many in this gold-loving and wealth-seeking age, it is, perhaps, not the strongest argument that can be adduced in its favor. If we estimate the occupation by dollars and cents merely, it will be found to compare favorably in its results with the most coveted offices of emolument and distinction.

We have said otherwhere, and we mean to follow it up in future numbers with reasons for so thinking, that unless American women become more familiar with the garden and the management of the horse, as weed-pullers, flower-growers and equestrians, the prospects before us are not flattering. One trouble, and one in which the ladies may *possibly* have a part, will be that there will be an enormous crop of old bachelors. Man needs a companion with strength to breast the ills of life, as well as taste to enjoy its blessings. The prospect of a wife feeble, faded, gone to the grave, just at the time she should be a fully developed, *magnificent woman*, is a terrible discouragement to the young man who longs (as heaven has made him to) for some one

to be loved and to love him all his life. To be a widower at forty, with half a dozen sickly children, he may well think would be the next worst thing after being a dried-up old bachelor. But enough said for the present. If the young ladies, and more, if their mothers, are as wise as we think they are, we have said enough already to create a demand for ladies' garden tools and side-saddles. N.

Manufactures, Mechanics, etc.

GAS FOR DOMESTIC PURPOSES.

We have devoted considerable space to a description of the nature, cost, and mode of using several of the different materials employed in illuminating our dwellings, and we now purpose to give a short space to the consideration of the use of gas, which, in view of all the favorable and unfavorable features connected with its general adoption for a stationary light, we regard as the best yet discovered.

That arrangement for illumination which is best for certain purposes, is not, of course, best for all. Among the great variety of conditions in which light is required, perhaps no one of the many forms of contrivances for illumination could be spared without some loss. Even the pine-knot of the frontiersman may be desirable, considering the cost and his necessities, rather than any of the improved lamps of recent times. But we do not hesitate to give it as our opinion that for stationary lights, whether for economy or comfort, nothing is superior to gas, at its actual cost; and with the facilities furnished at the present day, we have no doubt that improvements of substantial value will be made, even upon these. Many minds are turning their attention to this subject.

As a general rule, one fourth of a cubic foot of good coal gas is equal to the light of a mould candle for one hour, of which one pound will burn forty hours. Hence, the cost of that amount of gas must equal that of 1-40 a pound of candles, to be equally economical. But if gas is $3 00 a thousand feet, that is, three mills a foot, it is a great deal cheaper than sperm candles at the usual rates. At forty cents a pound, the cost of the given quantity would be one cent, or nearly three times the cost of gas, producing the same amount of light. But the economy of candles consists in the fact that families are content with a less quantity of light than they would naturally demand if they used gas. The usual cost of these candles is, generally, something less than forty cents a pound at retail.

Gas obviously has some advantages over every other form of illuminating material. But there is no process yet devised for lighting houses that has not its inconveniencies. The regulation of its flow and the manner of its production deserve special attention and constant care. Gas deteriorates if not used soon after its manufacture. Oil gas, of the specific gravity of 1.054, when newly prepared gave the light of a candle for an hour, and consumed 200 cubic inches.

After being kept two days, in giving the same light it consumed 215 cubic inches. After four days it required 240 cubic inches to produce the same amount of light. After three weeks it required 606 cubic inches. Coal gas required 460 cubic inches, after it had been kept two days, to produce the same light given by 404 cubic inches when first made.

The consumption or discharge of gas is nearly proportioned to the square root of the height of the column of water by which it is pressed, and inversely as the square root of the specific gravity of the gas. But this result will be greatly modified by the amount of friction, and the length of pipes through which the gas is conveyed, though a column of water at the place where the gas is consumed would furnish a fair basis for such calculations.

There have been many inventions, the design of which was to improve the machinery used in the manufacture of gas, both upon a large scale and for families. The former we do not purpose to elucidate. Large companies can take care of themselves. We write for small neighborhoods and for families.

WOODWORTH'S PATENT.

One of these "portable gas works" is manufactured by our Baltimore friends, Messrs. C. R. Woodworth & Co., who also have an office in Wall street. The machinery is simple, safe, and operates very successfully. It consists of an oil can or reservoir for the raw material, a stove, in which is set the retort or generating apparatus, a siphon, or condensing box, the water tank and gasometer, which contains from 300 to 1000 cubic feet. The care of it may be safely trusted to a domestic. The material used, is a rosin oil, (though not the "rosin oil" of the market,) which costs eighteen cents per gallon, each gallon producing the amount of one hundred cubic feet of gas. Such are the statements of the proprietors. Though we have often seen the light, we have had no means of testing the cost of the gas, or the amount of material required, or of the gas produced in a given time. The estimate of the company is a half-cent per hour for each two-and-a-half-feet burner. The cost of the apparatus of different sizes, delivered in New-York, is from $350 to $1000, with the traveling expenses of the workman, and time while traveling, and the expense of a tank or cistern, etc. etc.—(See advertisement.)

THE BENZOLE GAS LIGHT.

The discovery of Benzole is recent, and its first application to the manufacture of gas was in connection with the patent now owned by the American Gas Company of this city. It is extracted from the soft coals. Benzole, it is said contains 92 per cent. of carbon and 8 of hydrogen, and a cubic foot of it weighs two and a quarter pounds Troy. Benzole gas is described as consisting of six parts hydrogen and twelve of carbon. In its combustion, it has been mingled with alcohol; but the alcohol, more recently, is omitted, and water only added to it, upon the surface of which the benzole floats. A gallon of benzole, thus arranged, will produce a thousand cubic feet of gas.

The machinery used is a revolving cylinder, moved by a weight, wound up like the weight of a clock. The revolution produces a current of air through the cylinder, which passing through the water and benzole, becomes carbonized, so as to burn with a very brilliant flame. The entire apparatus, sufficient for a dozen burners, occupies scarcely more space than a flour barrel; and larger

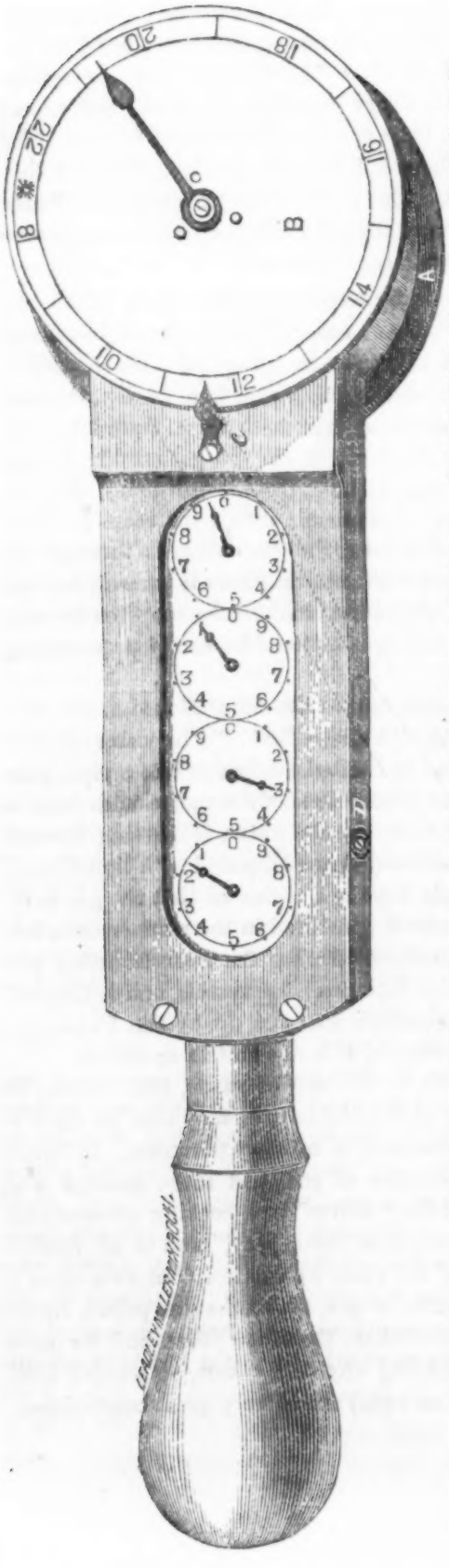
ones, for fifty or sixty burners, do not occupy much more room. It includes arrangements for keeping up a moderate temperature, thereby adding to the brilliancy of the flame. The benzole now costs $1 00 or $1 12½ per gallon. The cost of all the machinery for an ordinary dwelling house will not exceed $150. With these estimates, a thousand feet of gas will cost about $1 12½. The benzole ought to be manufactured for about half-a-dollar a gallon. It would then pay a good profit, and this would reduce the price of gas to a very small sum. The machinery requires scarcely more care than the filling of a solar lamp, once in a day or two, or as often as the benzole is consumed.

The following arrangement was secured by letters patent in April, 1855.

Gas Generator in a Parlor stove.—Let an outer cylinder surround an inner, each of such dimensions as the amount of service may require. The outer connects with a chimney, and the inner is connected by a pipe from the top, through a tube in any convenient direction to a side, or basement room, containing the condenser and clarifier, and to the gazometer. From the gazometer, the gas may be conducted by pipes to the rooms to be lighted. For using this, let both cylinders be filled with coal; the outer cylinder warms the room and also heats the inner one, answering to a retort, and the gas will pass through the pipes to the condenser and purifier into the gazometer, where it is ready for use. The gas being extracted from the coal, the refuse coal or coke can then be used as fuel in the outer cylinder, and thus the same material be used for generating gas and for warming the room.

The following description of the process used at the Astor House in this city in 1850, was originally published in the *Evening Post:* "The water used in its manufacture is discharged from a can in limited quantities into a pipe, passing through the retort. This retort is kept constantly supplied with iron or charcoal, the intense heat from which converts the water, in passing through the pipe, into steam. The steam thus formed is amalgamated with liquid rosin, of which there is always a large supply kept in a boiler, so that the gas is obtained simply from the combination of steam generated in the manner described and the liquid rosin. The volatile oil produced during the manufacturing process is discharged through a separate pipe into receiving vessels, and is disposed of at half a dollar per barrel. This apparatus was put up by the Union Gas Company, of Jersey City." For some reason, it is not now in operation.

Another important advantage secured by the use of gas is, that besides its convenience and economy for purposes of illumination, it may also be used to advantage often, for fuel, in heating rooms and in culinary processes. In former numbers we have alluded to this application of gas, and those familiar with Broadway can not fail to have noticed the "stoves" and cooking arragements, of especial benefit to small families, living in a "snug way," and to all families on special occasions. At this season of the year, we can keep our own room at 70° by an expenditure of ten cents worth of gas, at Manhattan prices, by the use of Shaw's stove. We have had one of them these two years, and for cooking a lunch or late supper, or for supplying any such wants, on a small scale, these and Demorest's (which also have an oven) are of very great convenience.



PLANIMETRE.

We have recently examined an instrument patented by Messrs. Jones & Griffen, of Rochester, N.Y., to which they have applied the name in our caption. For the uses for which it is designed, it seems to us all that can be desired. It is adapted to the measurement of surfaces, whether of lumber, of floors, sides, or ceilings of rooms, roofs, etc., etc., provided both dimensions do not exceed the limits of the largest index, which is twenty-two feet. These dimensions might be enlarged by a change in its mechanical arrangements.

It consists of a wooden case and handle of the size of the engraving in the margin. At the end opposite the handle, is a cog-wheel of brass, A, which is connected, by clock work, with four dials, corresponding to the dials of a gas meter, as described in our March number. A fifth and large dial is constructed at the end of the instrument, the index of which, *c*, is set to the length of the surface to be measured. The index of the four small dials, being set at O, the instrument is made to roll across the surface or surfaces. The revolution of this wheel setting in motion the clock work, with its indexes (or indices) on the small dials, shows the exact contents of the given surface. The large index C is designed to point to the margin of the board, and secure accuracy in the placing of the instrument. Its position does not affect the wheel work. The square feet of lumber, or floor, etc., can be exactly found in a much shorter time than its dimensions could be measured by a scale, yard-stick, or tape line. It requires a tally only when the total measurement reaches ten thousand feet, and no calculation will be required in measuring openings, as doors, windows, etc., further than to subtract their sum from the total. The whole may be meas-

ured as one surface, then the deductions measured as so many several surfaces, and their total as registered by the indices, etc., deducted from the gross amount.

The proprietors claim that, with this instrument, they can measure and compute the number of feet or yards in less time than any two men can take the dimensions of the same surface in the ordinary way, with rule or tape line. Hence they regard it as the best instrument for joiners, masons, plasterers, painters, roofers, etc. Rights and Instruments are for sale by the proprietors and manufacturers above named.

Recent Patents,

[ISSUED SINCE OUR LAST LIST]

LIST OF AMERICAN PATENTS.

We have decided upon a still more thorough reform in this department of our journal, and we shall henceforth prepare a classified list of all new patents, specifying what is claimed under the patent right so far as is possible and practicable. In the following we have not stricly followed priority of dates, though we purpose to do so hereafter. P.

Agricultural.

Churn, E. P. and J. A. Cowles, Oakfield, N. Y. The arms of the dasher are curved, so as to draw the cream from the center of the churn, and press it against the sides.——Sheep Shears, E. G. Chambers, Bucyrus, O.——Harvesters, S. A. Clemens, Rockford, Ill.——Potato Diggers, Paul Dennis, Stillwater, N. Y.——Machines for harvesting corn, J. H. Frampton, Hopewell, O.——Harvesters, Lewis W. Harris, Waterville, N. Y.——Raker for reaping machines, Caleb Lee, Knox Township, O.——Corn Husker, Wm. Lewis, Seneca Falls, N. Y.——Same, John Massey, Buffalo, N. Y.——Grain Cradle, S. D. Warren, Lebanon, Ala.——Preparing Fertilizers, Lawrence Reid, Barren Island, N. Y. Consists in treating with acid the liquid parts of animals, obtained by boiling or being treated by high pressure steam, and then with bone dust and absorbents.——Harvesting Machine, Geo. Esterly, Heart Prairie, Westerly, Wis.——Harvester, C. Halloway, Petersburgh, Va. Fixtures by which the machine may swing back and forward as it is lowered or raised, but be rigid when the draught is on.——Harvester, M. G. Hubbard, Penn Yan, Pa. Claim, a shifting seat, etc.——Convertible cider mill, Samuel Males, Cincinnati, O. A mill convertible from a cider mill to a corn sheller and *vice versa*. Mowing Machine, John Taggart, Roxbury, Mass. Claims a series of rotary cutters, working in recesses or guides, in combination with a knife sharpener, etc.——Paring apples, Benj. F. Joslyn, Worcester, Mass. The spur wheel is set obliquely to the axis of the fork shaft, and by the rotation of the apple, which it presses on, feeds it ahead, without the aid of other mechanism.——Harrows, Sidney S. Hogle, York, O. Its forward movement secures a rotary motion.——Harvester, Hiram Clark, Rochester, N. Y. Each of the cutting bars has, alternately, an advancing upward stroke against the grain.——Harvesting grain, G. R. Crane, Caldwell, N. J. Operating the bars to which the rake teeth are attached from left to right, by means of straps, etc.——Raising or lowering farm gates, to allow them to pass over obstacles, Dennis E. Fenn, Tallmadge, O.

Metallurgy, etc.,

[A portion placed under separate titles.]

Enamelling cast iron, Geo. W. Holly, Niagara, N. Y. The skeleton, core plate and core bed are covered with the coating substance, and then, pouring the melted iron around said composition, and melting or softening the same, so that it will adhere to the iron as it becomes cold.——Escutcheon for key holes, Edmund Field, Greenwich, Ct. A key hole drop in two parts, pivoted together.——Nipples, Wm. Cleveland Hicks, New-Haven, Ct. For withdrawing loaded balls or cartridges from breech loading fire-arms.——Shearing steel plates, Perry G. Gardner, New-York.——Coiling steel springs, Perry G. Gardner, New-York.——Carriage springs, Chas. A. McElroy, Delaware, O.——Cutting screws, Thompson Newbury, Taunton, Mass.——Bending sheet metal, Daniel Newton, Southington, Ct.——Carpenters' plane, Oldin Nichols, Lowell, Mass.——Fluid gates or faucets, J. W. Smith, Hartford, Ct.——Chuck for watchmakers' lathes, Wm. Stephens, Richmond, Ind.——Hoop pole Splitting-knife, C. Washburn, Bridgewater, Mass.——Stamping figures in carpenters' squares, Heman Whipple, Shaftsbury, Vt.——Second anchor shackle, G. Gilmour, Chelsea, Mass.——Shirt studs, J. P. Derby, Cavendish, Vt.——Lock, Wm. Whiting, Roxbury, Mass., and Henry Pickford, Boston, Mass.——Pocket lanterns, Andrew Ralston, West Middletown, Pa.——Hinge, Kingston Goddard, Philadelphia, Pa.——Cutting and bending sheet metal, Elliott Savage, East Berlin, Ct.——Metallic seals, Joseph Wappenstein, Philadelphia.——Trip hammer, Henry Bushnell, New-Haven, Ct.——Screw wrench, B. F. Joslyn, Worcester, Mass.——Grinding Saws, E Andrews, Elmira, N. Y. Connecting the saw to the mandrel by the ball joint, etc., for adjusting it while operated on by the stones.

Manufacture of Textiles, etc.

Machinery for felting hat bodies, J. B. Blakslee, Newtown, and E. R. Barnes, Brookfield, Ct.——Power loom, J. L. Cheney, Lowell, Mass.——Machinery for cleaning and separating cotton, wool, fur and other fibrous materials, Isaac Hayden, Lawrence, Mass.——Method of cleansing fibrous materials, John Howarth, Salem, Mass.——Combing wool, Michael H. Simpson, Boston, Mass.——Combing fibrous materials, Milton D. Whipple, Charlestown, Mass., assignor, etc.——Sewing machine, T. G. W. Robertson, New-York. Feeding the cloth by means of a hook, etc.——Cordage machine, Jas. P. Arnold, Louisville, Ky.——Manufacturing cotton flannel, A. S. Carleton, Clinton, Mass. A hard thread foundation, and extra filling of soft yarn upon one or both sides.——Shuttle drivers, Samuel Boorn, Lowell, Mass. A composition to be used in the manufacture of the striker of a shuttle driver.——Weavers' shuttles, Lucius J. Knowles, Warren, Mass. Contrivance to stop the loom when a thread breaks.——Sewing machine, C. D. Belcher, Charleston, S. C. An improvement on Wilson's, in the use of a brake to hold the loop upon the revolving hook.——Same, Joseph W. Barnham, Hartford, Ct. Mechanism to cut or clip the thread on the under side of the work.——Curtain rollers, Purches Miles, Hartford, Ct.——Felt cloth, Geo. C. Bishop, Norwalk, Ct. A bat made from roping or rovings, carded and formed as described.

Rope and Cordage.

Unmaking ropes and cordage, Joseph Wood, Brooklyn, N. Y. Reduces the cordage to the condition of oakum, in a very effective manner.——Rope manufacture, Michael H. Johnson, St. Louis, Mo. Combination of the condensing rollers with the calendar roller and bobbin as described.——Cordage machine, Jas. P. Arnold, Louisville, Ky. Improvements in outer end of nose tube, the wedge shaped opening between the face of the upper portion of the jaws of the nippers, and in the moveable jaw.

Gas Lights, etc.

Lubricating gas cocks, C. H. Johnson, Boston, Mass., assignor, etc.——Lard lamp, I. N. Coffin, Washington, D. C. Flat tubes inclined to each other at

right angles, with concave reflector.——Gas generator, A. M. Giles, Boston, Mass. Mode of increasing the heat of the retort.——Gas burner, John McHenry, Cincinnati, O. A removeable disk for varying the size of the burner. ——Fluid lamp burners, R. W. Sargent, Philadelphia.——Pocket lanterns, Andrew Ralston, West Middletown, Pa.

Steam Engines, etc.

Lubrication for steam engines and other apparatus moved by steam, John Henwood, New-York.——Valve gear of direct action, J. P. Ross, Lewisburgh, Pa.——Steam brakes for railroad cars, T. E. Sickles, Kennett Square, Pa.——Steam spades, G. M. Ramsey, N. Y.——Stop motion for steam engines, J. T. Ackley, Philadelphia.——Cut-off of steam engines, John F. Allen, New-York.

Navigation and Maratime Implemenfs.

Rigging vesssels, Geo. F. Trescott, Charleston, S. C.——Grappling and dredging machine, Augustus Stener, Mt. Joy, Pa.——Ships' windlass, Norman Smith, Stonington, Ct.——Friction rollers in ships' blocks, John Allender, New-London, Ct.

Civil Enginering and Architecture.

Veneering the walls of buildings, Geo. B. Field, St. Louis, Mo. A new mode of securing their plates of iron, marble, etc., to the walls and ceilings of rooms previously built. Weather strips, J. T. Foster and J. J. Banta, Jersey City, N. J., and J. H. Banta, Pierpont, N. Y. Constructing the weather strips with diagonal slots, taking pins in the door, so that an endwise motion given the strip in shutting the door shall cause the strip to press on to the still or casing, etc.——Breaking slabs or blocks of stones, Ira Merrill, Shelbury, Mass. By pressure and percussion combined.——Mastic roofing compounds, C. R. Milks, Detroit, Mich.——Bridge trusses, Albert Fink, Parkersburg, Va.

Land Conveyance.

Tire for car wheels, John Evans, Portsmouth, O.——Preventing dust from entering railroad cars, Philip M. Pyfer, Baltimore, Md. Rotary fans, outside the car, in connection with the windows.——Cast-iron wheels for railroads, J. M. Ross, Springfield, Mass.——Casting railroad car-wheels, Norman Aylesworth, Rochester, N. Y. A partially tubular cone, for the center of railroad car wheels.——Lubricating under pressure, Jacob D. Custer, Norristown, Pa. ——Steam brakes for railroad cars, T. E. Sickles, Kennett Square, Pa.——Railroads, Hiram Carpenter, New-York. Construction of chairs.——Supporting the tongues of coaches, T. B. Wakeman, Beloit, Wis. A brace in connection with a spiral spring.

Waterwheels and Windwheels.

Samuel Reynolds, Oswego, N. Y. Radical floats above the horizontal plane in combination with the buckets or floats below said plane.——Suspending windwheels, Joseph de Sendzimer, South Oyster Bay, N. Y.——Regulating velocity of windwheels, A. W. Wood, Milwaukie, Wis.——Same, F. W. Whiting, Twelve Mile Coletts, Gin, Texas.——Self-regulating do., A. P. Wilson, Salem, Ill. Simple and effective.

Hydraulics and Pneumatics.

Hydraulic jack, Geo. Lindsay, New-York.——Pump, J. F. Brickley, Winchester, Ind. A rod in connection with the valve, so that an ordinary lifting pump may be converted into a forcing pump, or *vice versa*.——Rotary pump, Abel Barker, Honesdale, Pa.——Same, Geo. W. Griswold, Carbondale, Pa.

Lumber, and machines for working, etc.

Circular sawing mill, Philander Eggleston, Mobile, Ala. Mode of suspending the log.——Shingle machine, H. D. McGeorge, Morgantown, Va.——Table gauge for circular sawing machine, M. B. Tidy, Ithaca, N. Y.——Circular sawing

machine, C. R. S. Wardwell, Lake Village, N. H.——Saw-mill dogs, John A. Taplin, Fiskhill, N. Y.——Cross cut sawing machine, Osborn E. Stephens, Mc'Call's Ferry, Pa.——Double carriages in saw mills, F. B. Kendall, Bath, Me.——Machine for planing tapering staves, Valentine Menck, Carrolton, La.——Graduating carpenters' squares, Heman Whipple, Shaftsbury, Vt.——Attaching hubs to axles, J. M. White, Tenia, O.——Wooden chair seats, Edwin, Artimas and Cheney Kilburn, Burlington, Vt. Mode of hollowing out the concave seat of wooden chairs by means of a grinding or cutting wheel.

Arts, Ornamental, etc.

Photograghic plate holder, Wm. and Wm. H. Lewis, New-York.——Photographic plate vise, J. W. Jarboe, New-York.——Melodeon, Riley Burditt and Hatsell Green, Brattleboro', Vt. A new mode of sounding octaves by pressing a single key. The levers are all "fulcrumed" on the same fulcrum board, and both board and levers may be removed and replaced readily.——Pianoforte action, J. A. Gray, Albany, N. Y.

Printing.—Hand printing press, N. L. Chamberlain, West Roxbury, Mass.——Same, Francis C. Coburn, Ipswich, Mass., assignor, etc.——Rotary printing press, J. C. Davis and Wm. Miller, Elizabeth, N. J.——Printing press, Horace Holt, Manchester, N. H. Designed particularly for printing cards. The platen is operated by a cam, with a rotating and vibrating ink roller, with novel means for throwing the cards from the platen.——Composing types, Wm. H. Mitchell, Brooklyn, N. Y. Regards the manner of dropping one type at a time from the line of types in the conductors, etc.——Hand stamp, Leonard Bailey, Winchester, Mass. New arrangement of ink fountain and its discharging roller, etc.——Same, Horace Holt, Winchester, Mass. Combination for inking and taking the impression.

Jewelry, etc.—Guard for breast-pin, J. M. Ross, Springfield, Mass.——Chronometer escapement, James Fulton, Louisville, Ky.

Fire-arms, etc.—Fire-arms, S. K. Lovewell, Gardner, Me.——Piston for muzzle loaded gun, John T. Foster and Jacob J. Banta, Jersey City, N. J., assignors, etc.——Bomb shell for killing whales, N. Scholfield and Wm. W. Wright, Norwich, Ct., assignors, etc.——Lubricating fire-arms, Samuel Colt, Hartford, Ct.

Household Implements, etc.

Washing machine, Richard Collins, Chicopee, Mass. A vibratory dasher, soap receptacles, with an aperture for discharge, etc.——Churn, E. P. and J. A. Cowles, Oakfield, N. Y.——Curtain rollers, Purches Miles, Hartford, Ct.——A combination of the tooth and flanged pulling, endless eyelet band, friction spring, etc.——Washing machine, L. C. Rodier, Detroit, Mich. A revolving cylinder in connection with an elastic jacket.——Soap mixture, Isaac Rooraback, Parish of Caddo, La.——Tin pan, G. Smead and E. F. Parker, Proctorsville, Vt. A milk pan with a stuck up bottom, and united to the side as described.——Paring apples, Benj. F. Joslyn, Worcester, Mass.——Baby walkers, Joseph Thomas, Brooklyn, N. Y., assignor, etc. A circular cushion or annular table constructed in halves, confining the child in a vertical position, but allowing it to turn at will with the cushion, etc.——Clamps for brooms, Samuel Mason, Indian Springs, Ind. So uniting the hinged portion of the case to the handle by a thong, cord or wire, that the leverage of the handle may be used for closing the hinged portion, etc.——Mangle, R. A. Stratton, Philadelphia.

Medical, etc.

Enema giving apparatus, B. T. Babbitt, New-York. By the employment of hydrostatic pressure, and a portable reservoir, etc.——Hernial trusses, A. T. Hardin, Shelby, N. C. A new position and application of the lever.

Miscellaneous.

Fire-proof stone, Thos. Hodgson, Brooklyn, N. Y. Molded stone for stucco work, architectural ornaments, etc., of pulverized granite, sulphates of iron, zinc and lime, starch and tannin.——Basin cock, Robert Leitch, Baltimore, Md.

——Plates for teeth, A. A. Blandy, Baltimore, Md. Manner of molding the plate.——Rock drill, T. H. Barridge, St. Louis, Mo.——Pen and pencil holder, G. H. Byron, Governor's Island, N. Y.——Cutting pasteboard for boxes, E. B. Clarke, New-Haven, Ct.——Telegraphic repeaters, M. G. Farmer, Salem, Mass., and A. F. Woodman, Portland, Me.——Bill holders, E. F. French, Franklin, Vt. ——Machine for stuffing horse collars, W. H. Haworth, Philadelphia. Peculiar position and application of the lever.——Brick machine, A. V. Hough and R. W. Jones, Greencastle, Ind.——Compensating the local attraction of the magnetic needle on ships, Calvin Kline, New-York.——Combs, Thos. P. Calking, Hartford, Ct., assignor, etc.——Fireman's mask and respirator, Israel P. Nelson, Cambridge, Mass., assignor, etc.——Making nitric acid, Philip O'Rielly, Providence, R. I.——Smut machine, Wm. Zimmerman, Quincy, Ill.——Feeding drill shaft, Geo. C. Taft, Worcester, Mass.

Method of preserving Meat.—It is claimed by Messrs. Shroeder and Durch that meats may be preserved a long time in filtered air. This is accomplished by lining the closet, in which the meat is kept, with panels of cotton wadding.

Wood—Fire-proof.—A patent has been secured for a process claimed to accomplish this, by steeping the planks in a solution of the phosphate of ammonia, and afterwards subjecting them to heat.

Iron converted into Steel.—The Damascus Steel Manufacturing Company have patented a method for converting wrought iron into steel.

Brick-making Machine. John Roberts.—A mode of making pressed bricks from the coarsest material has been brought before the English public. A series of cast iron molds is fixed in a circular track, and a roller, weighing from one to ten tons, connected with a beam and moved by cog-wheels, is driven round it by steam, or other convenient power. The clay or earth is thrown into the molds, when the roller presses it in firmly. This wheel is followed by a scraper, to remove the excess of material from the surface of the molds, a smaller roller acting as a balance, to prevent the scraper from rising. A wheel passing a second time over the molds raises the manufactured bricks from the molds. The bricks can be made of any form, and with any pattern or design impressed upon them.

Preservative Composition. Jo. E. Cook, of Greenwich.—This is designed to protect ships' bottoms, if made of iron; they are preserved from oxidation and the adhesion of various substances by the use of this composition. It keeps out dampness from oil-painted work, Roman cement, and brick-work, and protects stone-work from the influence of the weather and varying temperatures. It is also useful on plastered walls, where paper is to be laid on.

CEMENT FOR IRON.

The following recipe for cementing cracked iron, stoves, ware, etc., we can commend from our own experience:

Take iron turnings or borings, 1 lb.; salammoniac, 2 oz.; flowers of sulphur, 1 oz. Rub well together in a mortar, and keep for use. When wanted, take one part of the above, and twenty parts of iron borings, pounded and sifted, as before, mix in a mortar, and pour in water enough to give it the proper consistency. Apply it between the parts with a blunt caulking iron, or other convenient tool.

LARGE BRASS CASTING.

The Wedegar Iron Works, Richmond, Va., have recently turned out the largest brass propellers ever produced in this country. They are designed for the war steamers Roanoke and Colorado. Their diameter is 17 feet 6 inches, pitch 23 feet, and the weight of each is 27,000 lbs. The metals used were mixed as follows: copper, 100 lbs.; tin, 10 lbs.; zinc, 2 lbs.

FIRE-WATER, DOUBLY DISTILLED.

It is ascertained that we need not be dependent upon the vegetable world for our intoxicating liquors, but we may get most gloriously intoxicated upon the products of minerals. The Breckenridge coal is found to yield very respectable brandy, and if brandy, then all kinds of distilled liquors. Coal gas is first distilled and conducted into a receiver. It then contains about eight per cent. of hydrogenous bicarbon, which is separated from other matters and mixed with sulphuric acid. Water is added to this, and the compound distilled, and alcohol is the product. All it then requires is the flavor, and that is imparted by the same process now employed for seven eighths of what is sold for "Best Cognac." This, surely, is fire-water, and twice distilled.

COAL BURNING ENGINES.

We have given, as our opinion, that we are on the eve of very great changes in the production of artificial lights. We also believe that similar progress may be anticipated in respect to artificial heat. Thousands of minds are intently fixed on this as a practical question, and important results are certain.

One branch of this subject applies itself to the production of steam for locomotives and marine engines; unless, indeed, superseded by another improvement in the substitution of something else for steam. If careful and costly experiments will suffice, even this problem will, ere long, be wrought out and demonstrated. The use of coal on railroads is not new, entirely. We remember being on board an experimental train, in the Bay State, years ago, and the result compelled us to be satisfied with a cold dinner. But this, of course, was because the machinery, boiler, furnace, etc., were not adapted to that fuel. Changes have been made, and now experiments seem to promise success. We cut the following from two exchanges, though we are sorry to say that we have lost the name of the sheet containing one of them. The first is from the *R. R. Advocate*, which says:

"Those of our readers who are interested in railroad affairs, have doubtless noticed a new engine, of peculiar appearance, on the track of the Illinois Central Railroad, having a smoke-stack of the small straight pattern of English locomotives, in place of the large spark collector we have become accustomed to. These were built by William Mason & Co., of Taunton, Mass., under a contract to finish, for the Illinois Central Company, two passenger engines adapted to the use of coal, guaranteeing that they should burn the ordinary product of our Illinois mines without incommoding passengers with the smoke, using exclusively the coal found on the Company's line, until the test was

satisfactorily met, and the machines accepted. Not discouraged by some difficulties met with in introducing the first engine, they have put on a second, and this has run the passenger train between Chicago and Urbana for a fortnight past, probably not one passenger out of fifty knowing that the engine was burning coal. To test the machine more completely, several of the officers of the road left Chicago last week for Cairo, thence to Dunleith and back to Chicago, via Mendota—a grand circuit of 1,044 miles, run with one engine; and the whole was performed without the slightest delay or accident, or any visible failing in the tireless steed.

The consumption of coal during the trip was six tons. This experiment is the most successful of those which have yet been tried with Illinois coal, and the result is likely to be of the greatest importance in railroad economy."

Another, which arrived the same day, says:

"A very satisfactory experiment was made last Saturday upon the Boston and Worcester Railway, under the direction of Mr. A. S. Adams, the Master Mechanic. The coal-burner *Ajax*, with the Delano grate improvement, hauled five well filled passenger cars to Worcester and back, a round trip of 90 miles, burning but 2,450 pounds of coal and evaporating 1,998 gallons of water. This is equal to 6 8-10ths pounds of water to 1 pound of coal. The whole cost per mile run was 7 91-100ths cents. The *Ajax* is used for the freight service, and has 5 1-2 foot wheels, 15 inch cylinder, 20 inch stroke, 54 inch grate, 120 two inch brass flues, 10 feet 5 inches long, and is inside connected.

Another experiment was recently made on the Boston and Providence Railway with a Coal-burning freight engine built by the Manchester Locomotive Works. Although the engine was not adapted for the particular trials, she hauled at one trial a passenger train over the road and back, a distance of 90 miles, making the usual stops, and used 2,827 pounds of coal, evaporating 20,564 pounds of water, or 7 28-100ths lbs. of water per pound of coal. The engine has brass tubes."

ANSWER TO MECHANICAL PROBLEM.

[See April number.]

CLINTON, MASS., April 18, 1857.

MESSRS. PLOUGH, LOOM & ANVIL:—Being an interested reader of your valuable pages, I take the liberty to send you the following solution of the "Mechanical Problem" contained in your April issue:

The *man* on shore must pull as hard as his fellow in the boat, in order to retain his position. The *post* on shore does the same. The resistance to each boat is overcome by the force acting against the bottom or sides of the boat by means of the feet or limbs of its navigator, in bracing himself to pull upon the rope. The resistance to each boat being the same, and the forces applied to overcome that resistance being equal, both boats will reach the shore at the same time.

The problem is one which does not require and hardly admits of a *mathematical demonstration*, the point at issue turning entirely upon the question whether the pulling of the *live* post on shore makes the force applied to one boat more available than the pulling of the *dead* post does the force applied to the other; for, according to the statement of the problem, both these *posts* do precisely an equal amount of pulling.

P. W. F. C.

Recent Foreign Inventions.

CEMENT FOR UNITING PLAIN OR ORNAMENTED SURFACES OF GLASS, OR OF GLASS AND METAL OR OTHER MATERIAL. LOUIS CORNIDES, London.

THIS invention consists in the use of the following improved transparent cementing compositions or solutions for attaching metallic and other surfaces to glass; which operation is effected in an air-tight apparatus of the construction hereinafter described, into which the materials to be united are placed after the contact surfaces thereof have been coated with the cementing mixture; and further, in exhausting the air, by any suitable means, from the chamber containing the materials to be united; and, lastly, in the application of heat to the said chamber.

The cementing mixtures or solutions to be employed for uniting surfaces together are as follows: Cement No. 1, is composed of four parts of gum damar, or other transparent gums or resins, mixed with one part of spirits of turpentine or other solvent. Cement No. 2 is composed of one part gelatine, one part sugar, and eight parts water. No. 3 cement is composed of four parts gelatine, one part sugar, four parts water, and one sixteenth part of creosote, thoroughly mixed and incorporated together. In making and using cement No. 1, the gum is dissolved with turpentine by the aid of a sand bath, and when strained, a certain quantity is poured in the center upon one of the surfaces to be cemented; the edges of the surface are covered with paper to prevent the cement from running over the edges, and in this state the other surface is laid thereon, and pressure is applied to it by weights. When the process of cementing is completed, the paper is stripped from the edges thereof, and the edges are dipped in a thick solution composed of one part gelatine, one part sugar, and two parts water, which forms a cement, to be employed to receive a mounting of strips of lead, such as are used by glaziers for glazing small squares of glass with.

In using cement No. 2, the two surfaces to be cemented together are coated with the cementing solution, and when the coating is dry these surfaces are placed one upon the other, and afterwards subjected to the action of the apparatus hereinafter described. The edges of the two surfaces are next cleansed, and afterwards dipped in a thick solution of damar or other gum, dissolved in any suitable solvent.

In using cement No. 3, a small quantity of the cementing solution is poured upon the center of one of the surfaces to be cemented, and the other surface to be united is placed thereon, and by the application of pressure the solution is spread over the entire surfaces which are in contact. The edges of the plates thus united are cleaned, and afterwards dipped into a solution of damar or other gum, as aforesaid.

The following is the construction of the apparatus before mentioned to be employed for the purposes of this invention: The general form of the apparatus somewhat resembles a screw press, such as is commonly employed for copying letters; to the bottom of which a washer of vulcanized India-rubber, about half an inch thick, is adapted; and instead of making the top platten (to which the screw is affixed) flat, the edges thereof are made deeper or thicker than the middle, so that, when the platten is screwed down tight upon the India-rubber washer, it leaves an air-tight space, into which the materials to be cemented are placed—the depth of such chamber being in accordance with the quantity of surfaces to be operated upon at one time. The bottom of the apparatus is formed hollow, and has steam or other heat admitted thereinto. This cementing chamber is put into connection with an air-pump for exhausting the air therefrom, and causing perfect forced contact of the cemented surfaces, the heat fixing them in that position.

When it is desired to cement or unite together a larger quantity of surfaces than could be conveniently performed in the above apparatus, an air-tight room, constructed upon the same principle as the above apparatus, is used.

MODE OF LUBRICATING THE SPINDLES OF MACHINERY FOR PREPARING OR SPINNING COTTON, ETC. JOHN ELCE and S. F. COTTAM, Manchester.

This invention consists in attaching to the lifting-rail of a roving-frame or throstle, or other machine for preparing and spinning, in which a lifting-rail is employed, a rib covered with flannel or other suitable material, which being kept saturated with oil or other lubricating material, lubricates the spindles as the lifting-rail moves up and down.

IMPROVEMENT IN SPINDLES. JAMES MILLS, Oldham.

This invention consists in applying bushes or hollow-tubes of cast-iron or other suitable metal to the spindles used in spinning and doubling machines, in such manner that the bush will rotate with the spindles, and at the same time be at liberty to slide up or down on the same, as may be required.

IMPROVEMENT IN THROSTLES. PETER MCGREGOR, of Manchester, and THOMAS MARQUIS, of Lancashire.

This invention consists, firstly, in giving a longitudinal to-and-fro motion to a strip or rail of wood, iron, leather, gutta-percha, or other suitable material, covered with flannel or other suitable material, on which the bobbins are supported, for the purpose of producing a uniform friction between the bobbin and the flannel or other material. Secondly, the invention consists in driving the spindles by means of bands passing round vertical drums driven by a horizontal shaft and gearing.

IMPROVED MACHINE FOR BORING STONE, ETC. ALEXANDRE TOLHAUSEN, Adelphi.

This invention for improvements in boring and cutting stone is applicable to a variety of boring and internal cutting purposes, but is only intended to be used in operating within a hole which has been previously drilled or bored by some other means. It is capable of enlarging and making perfectly true the irregularly-shaped holes which are produced by the drill, which is most commonly employed for drilling stone. It is also capable of producing a large chamber of almost any shape, at the bottom of or at any distance from the mouth of a small hole, to contain a large charge of powder for blasting purposes, or to serve any other purpose. It is further capable of enlarging the lower part of any hole for fastening a shaft, pillar, or other support therein. It may also be employed to cut a screw-thread in the interior of a hole, and it may serve to perform many other useful boring and internal cutting operations.

IMPROVEMENTS IN ORNAMENTING OR DECORATING GLASS. HENRY PAGE, of Whitechapel-road.

This invention for improvements in ornamenting glass, consists in cutting on blocks the designs with which the surface of glass is to be ornamented or decorated, after the manner of blocks used in calico printing, paper staining, etc.; or the designs are cut out of thin metal or other suitable material, as in stencilling. If cut on blocks, the blocks are dipped, and receive the color from a sieve or roller, as in paper staining. If the designs are cut out in metal or other plates, the color is applied with a brush, and may be applied at once to the surface of the glass after it is prepared; but the following is preferred:—The surface of calico, paper, or other suitable material, is coated with size, gum, or starch, and when dry, the design is printed on it with colors made up in varnish, oil, or spirit. The size prevents the printed colors from entering the surface on which the design is printed, and when the whole is dry may be kept rolled up until wanted to be fixed on the glass. The glass is now prepared by taking off the polished surface with emery or other suitable material, and made quite rough, so that the first coat of varnish or cement may adhere well to the glass, which is then ready to receive a coat of white hard varnish, japan, copal, or other suitable body varnish, and when that is done, and before it dries, the surface of the printed design is turned down upon it and pressed down evenly. When quite flat the back is wetted with water, and that softens the size, which allows the fabric on which the design was printed to come away, leaving only the printed design on the glass: the whole is dried off together, and then washed well in water to remove any size that may have passed in the transfer.

The design or ornament now only requires hardening, and this is effected by placing the glass in a drying stove, oven, or other suitable apparatus: care must be taken that the heat is applied slowly, and not carried high. The heat must never be carried beyond the degree the nature of the colors will allow without injury. It should be observed, that if the stencil mode is followed, the design not only can be applied at once on the glass, but can, like the block printing, be first applied on paper or any other suitable fabric previously coated with size, gum, or starch, and then transferred, as before stated.

A new Metallic Composition for the coating of Surfacfs and for Molds and Castings. Benoit Frederic Ortet, Finsbury.

This invention consists in treating iron pyrites either alone or in combination with iron ore, or sulphur, or products containing sulphur; by which a substance called "ferreine" is produced, which is susceptible of being molded and applied to the manufacture of cisterns, basins, and pipes for conducting water, and to the construction of pavement, floorings, roofs, and the foundations of houses, for the coating of surfaces, and for other useful purposes.

In producing the substance called ferreine, two boilers of a given capacity, connected together by a tube adapted to each of their lids, are employed. In one of these boilers, yellow iron pyrites, or other product containing sulphur, is placed, such as the sulphurets,—but the natural sulphuret of iron, on account of its abundance and cheap price, is preferred. In the second boiler powdered pyrites or iron ore is placed. The fire under the first boiler being lighted, the pyrites is melted, and the sulphur (about fifteen per cent.) given off under the influence of the heat, distils over to the second boiler, heated to a low temperature, by means of which the sulphur combines with the iron ore in the second boiler, and produces a bisulphuret of iron termed ferreine.

Ferreine is produced in various ways, according to the intended application: first, the ferreine is prepared by melting the pyrites direct without distillation; secondly, by adding sulphur to it; thirdly, by mixing other sulphurets with it; fourthly, by preparing it artificially with ores containing sulphur and iron combined in any proportions. The different changes which the ore undergoes during its treatment, cause it to acquire properties which render it completely unalterable under the effect of air, water, and acids.

The ferreine, when produced, must be submitted to the molding and casting processes, for the purpose of obtaining the required result, when it may be painted, gilded, or bronzed, like the metals.

Method of preserving Wood from Decay and from Injury by Insects. Robert Wiltiam Sievier, Bruxelles, Belgium.

This invention consists in subjecting timber or wood, when saturated or impregnated with materials or solutions used for preserving such wood or timber, to pressure between rollers, or otherwise, so as to compress the substance thereof and close up the intersticial spaces, by bringing the woody matter into closer contact,—the result being that the wood is rendered perfectly impervious to the decaying influence of air or water, and the attacks of insects, while at the same time it is rendered more dense and durable; and it is also capable of being used in place of the harder and more scarce and costly woods, being, by this process, capable of receiving the highest polish and of resembling them in their general properties. The wood is prepared for pressure by causing the pores to become filled with rosin, tar, pitch, bituminous matters, or any other materials or compounds used for preserving wood, and, if necessary, with coloring matter. Solutions of gelatine, in combination with certain solutions of metallic salts, are sometimes employed—the process being so arranged that their mutual decomposition may take place in the pores of the wood, and solid matter be therein deposited and precipitated; or any of the well-known chemical salts or compounds are employed, which will, upon contact or mixture, throw down or deposit solid matter. Chemical compounds, such as chloride of mercury, sulphate of copper, sulphate or chloride of zinc, arsenious acid, nitrate or acetate of lead, antimony, or any other suitable salt or poisonous drug, are also used to prepare the wood, prior to its treatment with any of the substances

mentioned (by preference), when it is required to preserve such woods from the action of insects; or these salts or materials are used, in combination with the others named, whenever it is desired. If the wood or ttmber is intended for situations where the "toredo navalis," or any other destructive insects abound, it must be first impregnated with some of the above, or other poisonous substances; and (by preference), when the wood is dry, it is to be impregnated with the bituminous substances, and then subjected to pressure.

In carrying out this invention, the wood is first heated in any convenient manner, in order to expel all moisture and air, and then it is plunged into a bath of pitch, rosin, bitumen, or any of the solutions named, or pitch, bitumen, rosin, etc., dissolved in any suitable solvent; and the process of impregnation is also promoted by means of proper exhausting apparatus communicating with the timber, by means of which the pores of the timber may become exhausted of air, and the materials be driven therein by reason of the pressure of the atmosphere; but any of the well-known methods of saturating or impregnating timber with substances, for its preservation, may be adopted.

The operation of saturating or impregnating being complete, the timber is removed from the bath or vessel, and placed in some convenient situation for draining it, and removing all superfluous fluid. The wood, so saturated, is then subjected to the pressure of powerful rollers, the surfaces of which may be made to correspond to any suitable shape or design which it may be desired to give to the timber; or any other suitable means of effecting the necessary pressure, and sustaining the same for the necessary period, is employed. The fibres and cells of the wood thus become powerfully compressed, and squeezed closely together in a more compact and reduced mass; which compactness is increased and rendered durable by reason of the resinous, bituminous, or other matter contained therein; and the pores of the wood being filled and condensed, the timber is thus rendered impervious to water or air, and the attacks of insects. The wood should be passed slowly between rollers, which will shape the wood and squeeze the fibres closer togegher: it should be gradually pressed into the shape required, in the same manner as the rolling of iron: for instance, a piece of American pine wood will easily press into half its former bulk; but if the pressure is given at first with too great a force, the fibre of the wood is, to a certain extent, destroyed, and its strength injured. The wood is passed several times between the rollers slowly; each time the pressure being increased: this gives the fibres of the wood time to arrange themselves without being injured by fracture. The wood should be sawn a little into the form intended to be rolled: for instance, suppose a sash window-frame is desired to be made, the sectional form of the wood should be a sort of lozenge, so that the rollers may more easily press it into the shape intended. The same must be done with the wood intended for girders or any large pieces of timber. Should the timber require bending, the machines in use might be so modified as to bend and compress at one operation. When planks of compressed wood are required, the timber may be sawn into planks before or after compression; but it is preferable to compress the wood after being sawn into planks. The same with regard to veneers, which are produced, by this invention, of great utility and value. Wood, when colored or stained, and impregnated as described, posessess, after compression and subsequent finish, a very compact and beautiful appearance, which renders it extremely serviceable in ornamental or cabinet work, and for tesselated wood floorings.

A NEW OR IMPROVED METHOD OF MANUFACTURING TUBES OF COPPER AND ALLOYS OF COPPER. By THOMAS WILKES, of Birmingham.

In manufacturing hollow cylinders or tubes of copper, or brass, or such alloys of copper, thick hollow cylinders are first made by casting or otherwise. They are subjected to the operation of grooved rolls, so as to elongate them and diminish their diameter, and thereby to convert them into such tubes as are required in commerce. The tube has an internal support or mandril while being subjected to the action of the rolls, and it is rolled in a series of progressively diminishing grooves until it has been sufficiently elongated and reduced in diameter.

Miscellaneous.

Scientific.

CHEMISTRY.

We have never supposed that the practical farmer should undertake to be a practical chemist. The latter is a trade by itself. The former is the best business in the world—the great, Heaven-appointed employment, for about half of the whole human family—an avocation compatible with high intelligence, great self-respect and general esteem, but not favorable to a cultivation of the exact sciences. If, therefore, an individual wishes to be a chemist, we would advise him not to be a farmer; and *vice versa*, if he has the ambition (and it is not a low ambition) to be a first-rate farmer, we would not advise him to undertake to be a chemist also.

There is, however, such a thing as chemistry for the million, including the farmer and all the industrial classes. It might be called the *chemistry of common life*. Now, there are sixty-four simple substances in nature, making up, as is believed, the solid globe and all that is upon and around it. This is not a large number. At first thought, we should say that anybody might become acquainted with so many, or rather so few. But these combine variously with each other, and form millions upon millions of compounds. It seems hopeless, therefore, for any, except those who give nearly the whole of life to the study, to be chemists in any liberal sense of the term; and it is for this reason that we would not advise a person to attempt very much in this line, unless he means to make it a life business.

Shall, then, the active, the useful, the laborious—those who exercise the bone and the muscle that hold up the world—despair of knowing any thing of so important, so useful a science? We say not. For a long time, we have been of the opinion, that chemical facts, interwoven with the industries of life, and especially with agriculture, may be drawn out and presented to the unchemical mind, (if we may coin a word,) so as to be comprehensible to all who have a little patience; and not only satisfactory, but highly useful. Of the sixty-four elements which are supposed to constitute the whole globe, fifteen only compose by far the greater part, probably more than ninety-nine hundredths of the whole. It is true that almost innumerable compounds are derived from these fifteen, but a few of them only are important. If we take the fifteen elements and thirty-five of their more important compounds, making fifty in all, we have about all that constitutes our soils, the vegetables and animals upon them, the air above them, our own bodies, our garments, dwellings, every thing with which we are conversant.

To know how these substances exist in the air and soil, how they are transmuted first into vegetable and then into animal life, how upon the destruction of organized beings they return again to the soil and the air, and by what laws they are reproduced in other forms of life, is not only a matter of ingenuous curiosity, affording a high degree of rational pleasure to the inquiring mind, but of real, practical utility; since such knowledge improves the judgment, makes good common sense better common sense, and often decides the best course to be pursued, where other indications, without this, would be insufficient. Let us not be understood to say that science can create good common sense and sound judgment where they do not exist. It can not; and yet these are all-important; nothing can be a substitute for them. But we do say, that these, and every practical quality of the good farmer, may be improved by

such knowledge of the chemistry of soils and crops, as every farmer, and more especially the young farmer, and the boys not long out of school, may, without much difficulty, and without the consumption of much time, acquire.

Disclaiming the idea that farmers, and men in the other active pursuits, can be chemists, in any such sense as to compete with men whose life-work is science, we insist, nevertheless, that with a little patience, the grappling with a few terms uncommon to them, and the appliance of thought and memory to no large extent, they may learn what will be of great service—may pass the threshold, if they can not traverse the whole interior—may see much to gratify no idle curiosity, but a rational love of knowledge, and may bring away much that will be subsidiary to the important work of their lives.

With these views, we propose to commence a series of articles, to be entitled *Chemistry for the Million.* The first will be found below. If our readers generally, shall find instruction or pleasure in their perusal, we shall be gratified; and we say to them here, that after a few of the first articles, which must of necessity be destitute of much that is directly practical, we shall endeavor to make them useful, by the application of truths before developed, to the every-day business and interests of life.

But our aim will be more particularly to benefit the younger members of the families, to which our work is a monthly visitant. To them we say, conquer the hard names; do not let them discourage you in the outset; we will introduce no more of them than is absolutely necessary; understand them from our definitions, as well as you can, without the living teacher at hand, with eye on yours, to answer your questions; and we promise you that that the study will be easier as we advance. One of the Greek philosophers—we are ashamed to have forgotton which—said: "The roots of education are bitter, but the fruits are sweet." The first is *not* true, in our experience; the last is.

We do not propose to make you profound chemists in a few short lessons. If your parents can send you to better school than ours, it will be well. But with your efforts to comprehend the science, in connection with ours to simplify and make it plain, we will give you what will be a great deal better than nothing, on a science interwoven with all the affairs of life.

Our first number must be short, for the want of space. Succeeding numbers will be short, because we shall not choose to occupy long spaces with matter that may not interest all. And we shall continue these articles no longer than we have evidence that they are appreciated as useful.

If any of our young friends will write us, stating their difficulty to understand us on any point, we will either explain their point of difficulty in a letter returned, or in a subsequent number of this journal.

CHEMISTRY FOR THE MILLION.

MATTER, chemically considered, is *organic* or *inorganic.* Vegetables and animals—any thing that is organized into the various forms of life—are composed principally of organic matter; rocks, soils, and other things without life, are composed mostly of inorganic matter.

Mineral is often used in the same sense as *inorganic.* Thus, we might say of a soil, that it contains two per cent., that is two parts in a hundred, of organic matter, and 98 per cent., or 98 parts in a hundred, of inorganic or mineral matter, both terms, when so used, implying the same thing.

When a body is destroyed—so far as any thing can be destroyed by man, not put

out of being, but reduced to the elements of matter, out of which it was first made—the organic parts go into the air; the inorganic parts into the earth. Hence, we conclude, that when that body was produced, the inorganic parts came from the earth, the organic from the air; and we infer that all which grows—a plant, a piece of wood, a quantity of flesh, a bone, for instance—comes partly from the air and partly from the earth; and that the earth and the air are the great store-houses from which all plants and all animals are produced.

It may be interesting to inquire in what proportions the materials for all living organizations come from each of these sources. If you burn a piece of pine wood, weighing 100 lbs., 99 lbs. of it go into the air. So much, then, must have come from the air, when the tree grew. If you burn 100 lbs. of oak wood, about 98 lbs. pass into the air, and about 2 lbs. fall as ash. Then, 98 lbs. came from the air and 2 lbs. from the ground, when the tree grew. If you burn 100 lbs. of dry potato vines, about 88 lbs. or 88 per cent. rise into the air, and not far from 12 lbs. or 12 per cent. fall as ash. Then, 88 per cent. came from the air, when these vines grew, and 12 per cent. from the soil.

But if instead of burning these things, you were to throw them upon the ground, the results would be similar. The same parts would pass into the air and the same into the ground. The only difference would be in the time. By combustion, the process would be performed in a few minutes; by ordinary decay, it might require many years.

What these substances are, which come from the air and soil, to build up first vegetable life, and then, through vegetables used as food, to construct animal organizations, it is the province of chemistry to inquire. Our senses are utterly unable to detect them, as they exist in air and soil. Reasoning, argumentation, philosophizing, are inadequate. Only hard work in the laboratory, "*going at it*," fire and tongues and hammer, torturing nature resolutely, has compelled her to give up her secrets. She has yielded a prodigious number of them under this torturing process, and is destined to yield far more. Chemistry is a vast science. Through it, a mighty revelation—we say this reverently—is being made, for which we all ought to thank God; for although we may not all know much of chemistry, yet we are all enjoying a thousand comforts and luxuries, which we should not have enjoyed, had not others known more of it.

If we again recur to the question, What are those things in the soil and air which feed plants, and through them, animals? the answer is, they are fifteen simple elements of matter, and with the exception of the merest trifle of one or two others, no more. Each of these is distinct in its nature from all the others. Each is very unlike any other. Each, under certain circumstances, combines with one or more of the others, and forms compounds. These compounds are as unlike the elements composing them, as light and darkness, or fire and water.

Four of the fifteen elements are *organic*, viz.: *carbon, hydrogen, oxygen, and nitrogen.* These may be remembered by the short word, or syllable, C H O N, C standing for carbon, H for hydrogen, etc. The other eleven are *inorganic*. They are chlorine, sulphur, phosphorus, silicon; iron, manganese; potassium, sodium, calcium, magnesium and aluminum.

Every one of these fifteen elements, except perhaps, the last, is found in our own bodies, and in all animals, in plants and in soils, the plant taking them from the air and the soil; the animal taking them from the plant, or from other animals used as food.

Would the reader like to have a more definite idea of *what* these elements are, *how* they contribute to build up plants and animals, and *what* becomes of them when these

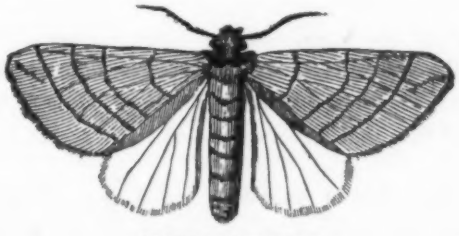
living organisms perish? If so, we will strive, in future numbers, to gratify his curiosity, or rather his love of utility; for we believe that, curious as are the revelations of chemistry, they are far more useful than curious.

INSECTS—

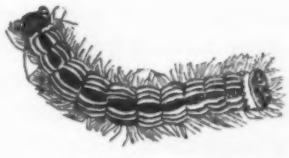
Injurious to the leaves of Trees and Shrubs.

CATERPILLARS, CONCLUDED.

The gellow naked apple tree worm, or the Handmaid Moth—Eumetopoma ministra, (Drury.) Petasia ministra, (Westwood.)



HANDMAID MOTH.



HANDMAID MOTH WORM.

This destrective caterpillar is cylindrical, dull yellow with light yellow stripes and black head when young, becoming black, with light yellow stripes and yellow neck. When alarmed, they elevate both extremities of their body. They live in dense clusters, and strip whole limbs of their verdure.

The wings of the moth vary in color from buff yellow to brown, and are crossed by four or five narrow bands, regularly curved. The fringe of the wings is short, and of the same color with the bands. The hind wings are pale or whitish, tinged more or less with tawny yellow, or dusky. The head and fore part of the thorax is yellow or orange, behind, nearly the color of the wings. The feelers or palpi are very small, and pressed close to the under side of the head, and are clothed with short hair-like scales, their tips being very slightly exposed. The antennæ in the males have two rows of short hairs along their inner sides; in the females, they are entirely naked and scarcely a third the length of the wings.

The presence of these worms is often noticed for the first time, by the nakedness of a limb. On examination, numbers of plump, glossy worms, varying in color from dull yellow to black, may be found on a contiguous branch, all crowded together, with their extremities raised upwards if at rest, or if eating, arranged on the under side, each head near the margin of the leaf, appearing like a string of beads. If the limb is struck, they elevate their extremities and remain rigid and motionless till their alarm has subsided.

In passing from one limb to another, they spin a thread so fine as to be invisible to the naked eye, which clings to the bark, and furnishes a guide by which the few stragglers that are sometimes left behind after the mass have removed their quarters, can track them without difficulty and rejoin their company.

The worms are from six to eight weeks in coming to their full size, but when ready for their transformation, they all, with rare exceptions, evacuate the tree in a single night, and enter the ground three or four inches, and in twenty-four hours (according to Dr. Harris) become chrysalids. But Dr. Fitch has found them, he says, unchanged, though contracted in size, after they had been in the ground ten days.

The Apple shoulder striped Tortrix, Brachytænia Malana.—This is a thick cylindrical worm, about one inch and a quarter in length, of a pale green color, and fine

white lines and numerous white dots. It appears sometimes in the last days of May, and sometimes later, and does not disappear till August or September. It eats irregular notches in the margin of the leaves of the apple tree, and sometimes of the cherry, peach, and some few forest trees, and also holes in the middle of the leaves When ready for its transformation, the worm detects a thrifty leaf, one half of which it bends into a cylindrical or curved position by attaching silken threads to its edge, and also at or beyond its mid-rib, thus gradually drawing the two points together, and forming a hollow cavity of sufficient size to contain its own body. It then crawls into it, and continues to weave its web until it is entirely covered. The first moths appear in July.

These moths lay their eggs upon the leaves, and produce another brood the same year. The pupa of this second brood is dropped upon the ground with the leaves, in the autumn, where they lie till spring, when the warm weather hatches them. But Dr. Fitch believes that some of these moths are hatched during the fall, and secrete themselves in crevices, as under the bark of trees, and remain torpid through the winter. His own observation has satisfied him that freezing one of these moths does not always kill it.

These worms are not so destructive as those before described, but they ought to be familiar to the farmer, so that he may not misjudge as to the nature of the enemy he finds himself obliged to encounter. It should also be remembered that worms resembling these are found, with similar habits, producing moths of a very different species, to wit, an ash gray moth, belonging to the family of Noctuidæ, or those which fly by night only.

It is not necessary to describe the means by which the fruit-grower may defend himself from these species. The directions before given in reference to others far more destructive, will be sufficient to turn his attention to the use of any one or more of those, as the extent of the danger threatened may lead him to judge to be expedient.

CLASSIFICATION.

We can scarcely be charged with frequent or overdosing our patient (?) reader, if we here describe the three great sections of Lepidopterous insects, while the knowledge derived from it may enable one to be confident in determining the name of a worm or moth where our past explanations may leave him in doubt. The differences thus brought into notice, unlike some, in other parts of the system, are perfectly simple and easily understood.

The first section includes all the *Butterflies proper*, and all the insects of the genera belonging to it are furnished with antennæ which are thread-like, and *have a knob at their extremities.* This section is the original PAPILIO of Linnæus, the individuals belonging to it being called, in the plural, Papiliones, or true butterflies. The second section contains the *Sphinges*, or *Hawk moths*, all of which are furnished with antennæ, thickened towards the middle, and more or less tapering towards either extremity. Many have their antennæ hooked at their tips. They chiefly fly during twilight—fly rapidly, and make a noise much like that produced by the flight of a humming bird. When at rest, their wings lie horizontally or in an inclined position on the back. The third class contains the *moths* which have antennæ that are neither knobbed nor thickened towards the middle, but which are naked, tapering or bristled-formed, or else which are feathered on each side. These are of two classes, those which fly by day and those which fly by night only. Familiarity with this short statement will prove of great service to the student of entomology.

THE AGE OF SEEDS.—The fact that age adds value to seeds may be perfectly familiar to agriculturists, but it is new to us. A gentleman in this city is in the habit of saving his melon seeds until they are six or seven years old, and maintains with entire confidence, that, in consequence, they germinate more readily, and originate more prolific plants. This theory has recently received striking confirmation in France. In 1852, as we learn from the Paris correspondent of the *N. Y. Times*, a few grains of wheat were discovered in the tombs of some ancient mummies in the south of France, supposed to have been two thousand years old. They were planted, and produced the astonishing amount of 1,200 grains to one. The Government assumed charge of the matter; and since that, the product has been magnified in such an immense proportion, that the minister of agriculture is now enabled to distribute large quantities over the empire, with instructions from the government farm as to the best mode of cultivation.

It is suggested that the immense productiveness of this wheat is owing to the long *rest* of the seed. We imagine that it would be hard to find sufficient cause in any other direction. It opens a very fine field for speculation and inquiry, and if any of our readers have facts bearing upon the subject we should like to get hold of them.—*Springfield Republican.*

We have long been of opinion that seeds, kept at a low temperature and subject to no changes of heat, cold or moisture, would preserve their vitality an indefinitely long time—ten years, or ten thousand, or ten million. Our belief is founded on the idea that no change is going on without a variation of temperature, or in the degree of moisture; and if no change is passing, then no matter how long the time, the seed will be the *same* at any and all points of the limitless future.

It is so with cold-blooded animals. If a frog, after being locked up in solid rock thousands of years, will arouse himself from suspended animation, and snuff the nearest water, and instinctively hop away towards it, why would he not after millions of years. If a change were going on in his organization, a few years would destroy his vitality; but if no change is going on, then it makes no difference how long or how short the time.

The idea that seeds improve by keeping, is "*bran*" new to us, and we hardly think it can be correct; but it may be, and it is well worthy of the French Government and any other to inquire into it. One thing is certain—there is a great deal yet to be learned. If governments will employ their resources to enlarge the boundaries of human knowledge, it will be well.

We are six thousand years old, as a race, and not half as wise as we might be. If the American people would establish an Agricultural Department of the Government, it would make 10,000,000 farmers wiser. At an expense of $5,000,000 a year—an enormously high estimate, five times as much, we suppose, as need be expended—it would cost but fifty cents a head—almost cheap enough.

Domestic.

FUNNY RAT-TRAP.—A correspondent of the *Genessee Farmer* relates the following funny way of catching rats: "I build my corn-crib on posts about eighteen inches high, made rat-proof by putting a broad board or sheet-iron on top of the posts. Make every thing secure against rats except the granary, and have this rat-proof except at one of the back corners. Here, where they will like it best, make a nice hole with a spout five inches long on the outside where they can go in and out and eat at pleasure. Then, if I think the rats are too numerous, I take a bag, after dark, and slip the mouth over the spout on the outside of the granary. Then send "Ben" in at the door with a light, and the rats and mice will all run into the bag. Then slip the bag off the spout, and slap it once or twice against the side of the granary. Turn out the dead, and in an hour or two repeat the process. After all are killed, stop up the hole till new recruits arrive, which catch in the same way."

ANOTHER, BUT TOO SELFISH.—An inquirer wishes to know how he may rid himself of the rats which so infest his premises, and I desire to inform him how I got rid of mine, that had taken possession of my house both up-stairs and down. I just went to the paper-mill and procured three or four pounds of chloride of lime and placed it in their paths, and they all left forthwith; a neighbor declaring, that on that night he had about a thousand of them on his premises, and I guess he had!

LOOK ON THE BRIGHTEST SIDE.

By N. Stone.

Old man, I prithee tell me why
You always wear a smile,
Though others oft look wan and sad;
How do you care beguile?
Though doomed to toil and penury,
And bowing down with age;
Yet still light hearted, blithe and gay
You tread life's weary stage.

I'll tell thee all, my youthful friend,
The good old man replied;
Whate'er may hap I always look
Upon the brightest side.
O'er all the land there's not a man,
How hard soe'er his lot,
But if he will, can often find
A bright and sunny spot.

WASHING FLUID.—Take one pound of sal-soda and half a pound of unslacked lime, put them in a gallon of water and boil twenty minutes, let it stand till cool, then drain off, and put away in a stone jug or jar. Soak your dirty clothes over night, or until they are well wet through, then wring them out and rub on plenty of soap, and to one boiler of clothes well covered over with water add one tea-cupfull of the washing fluid. Boil half an hour, briskly, then wash them thoroughly through one suds and rinse well through two waters, and your clothes will look better than the old way of washing twice before boiling.

This is an invaluable recipe, and I do want every poor tired woman to try it. I think, with a patent wash-tub to do the little rubbing, the wash-woman might take the last novel and compose herself on the lounge and let the washing do itself. The woman who *can* keep a secret has known this a year or two, but her husband told it while on an electioneering tour.—*Indiana Farmer.*

CURE FOR THE HOG CHOLERA —A correspondent residing in Ohio writes that he has discovered a remedy for the malady among hogs which has proved so fatal in that and other States. His remedy is two quarts of flax seed boiled in ten gallons of water till the seed is thoroughly cooked; let it stand till cold, then give it to the hogs as fast as they can drink it—turn it down if they refuse to drink. Repeat the dose for a week or so, and it will effect a cure. Pulverized charcoal and sulphur mixed in milk, I know to have cured the hogs of this fatal disease last fall in this neighborhood.—*Genesee Farmer.*

☞ SIR WILLIAM TEMPLE has observed that the love of gardens is the only passion which augments with age, and adds, that all men eat fruit who can get it; so that the choice is only whether one will eat good or bad; and all things produced in a garden, whether of salads or fruits, a poor man will eat better who has a garden of his own, than a rich man who has none.

☞ A COUNTRYMAN in a light hat who was too modest to give his name, brought a bushel of black snakes into Hartford. There were 91 of the beauties, weighing 81 lbs., and they were found by their captor rolled into a ball, about two feet below the surface of the earth.

☞ CONSCIENCE is a curious commodity.—It is warranted to stretch; and though it will not exactly wash, it will turn perfectly well, and often nobody can tell when the "seamy side" is without or within.

THE MARRIAGE RELATION.—The great secret is to learn to bear with each other's failings; not to be blind to them—that is either an impossibility or a folly; we must see and feel them; if we do neither, they are not evils to us, and there is obviously no need of forbearance; but to throw the mantle of affection round them, concealing them from each other's eyes; to determine not to let them chill the affections; to resolve to cultivate good-tempered forbearance, because it is the only way of mitigating the present evil, always with a view to ultimate amendment.

Children's Page.

We have not that variety of amusement for the children in this number, which we hope to have for future numbers; but here is an excellent little poem, which has been handed us by a friend; and if the children will learn it "by heart," we will strive to give them something good at other times —Ed.

DO GOOD.

Do good, whilst here on earth you dwell;
'Twill meet a sure reward;
The angel harps each deed will tell,
And God the pay award.

What though nor fame nor fortune fall,
Nor loud acclaim of men;
That God whose eye is over all
Each noble act will ken.

Is it not great, when, from the heart,
A kindness doth proceed,
Which doth at once a joy impart,
To him who hath your need?

Then, when you can, to sorrow's call,
The drooping heart elate,
Rememb'ring though the cost is small,
All kindly deeds are great.

THE VEGETABLE KINGDOM.

Read what Captain Job Prest, in his "Wonderful Adventures," says of the vegetable kingdom:—"The term vegetable—sometimes pronounced wegetable—is probably derived from the peculiar long and pointed form of this description of esculent; hence, originally called wedge-eatable, then wedgeatable, and now refined into the present form.

"Annual flowering plants resemble whales, as they come up to blow. Flowers are very warlike in their disposition, and ever armed with pistils. They are migratory in their habits; for wherever they may winter, they are sure to leave in the spring, most of them very polite and full of boughs. Like dandies, the coating of many trees is their most valuable portion—cork-trees and boot trees for instance. Grain and seeds are not considered dangerous, except when about to shoot. Several trees, like watch-dogs, are valued mostly for their bark. A little bark will make a rope, but it takes a large pile of wood for a cord. Though there are no vegetable beaux, there are a number of spruce trees. It is considered only right and proper to ax trees before you fell them. Fruit-trees have military characteristics; when young, they are trained; they have many kernels, and their shoots are straight. Grain must be treated like infants; when the head bends it must be cradled, and threshing must be resorted to, to fit it for use. Tares are mostly found with smaller grains—which require sewing. Great indulgence in fruit is dangerous—and too free use of melons produces a melon-cholic effect. Old maids are fond of pairs—but can not endure any reference to dates. Sailors are attached to bays; oyster-men to beaches; love-sick maidens to pine."

"Did you ever go to a military ball?" inquired a lively girl of an old soldier.—"No, my dear," replied the old Revolutionary; "in those days the military balls came to us.

A drunkard's nose is said to be a "light-house, warning us of the little water that passes underneath."

Diogenes being asked of what beast the bite was most dangerous, answered: "Of wild beasts, that of a slanderer; of tame, that of a flatterer."

☞ It is not money *earned* that makes a man wealthy: it is what he *saves* from his earnings.

Book Notices, etc.

ELEMENTS OF AGRICULTURAL CHEMISTRY AND GEOLOGY. By JAS. F. W. JOHNSTON, M.A, late of Durham, England, with a complete index and American preface, by SIMON BROWN, editor of the *New-England Farmer*. Published by C. M. Saxton & Co., 140 Fulton-st., N.Y.

This is not a new book. The substance of it has been before the English and American people in various forms for at least a dozen years. Neither is it a good book for indiscriminate circulation. Superficial readers can be better suited. We notice it at this late day, for the purpose of giving to our agricultural readers our opinion of its value, and for whom it is valuable.

In the first place then, we consider it worth nothing for that class of farmers who cherish ignorance as a sort of birthright, and think that all are born with knowledge enough to be farmers, but have a great deal to learn in order to be any thing else—a class, *we are thankful*, small, and becoming smaller.

In the second place, it is worth little for those who want a work on agriculture to be so eminently *practical*, as they mistakenly call it, as to teach them what to do every day in the year—always explaining the *when* and the *where*, and sometimes the *how*, but never the WHY—as if the writer presumed the farmer to be incapable of investigation, a thing which we regard as a gross insult to the class.

For men who love to go into the *reasons of things*, to know the *why* and the *wherefore*, to conquer difficulties, comprehend great principles, be *independent thinkers*, doers of farm work with an enlightened judgment and a good profit, Johnston's *Elements of Agricultural Chemistry is the very book*. It is a capital thing for young men, who would improve as much upon their fathers as their fathers have upon their grandfathers, and so keep the progress up.

Men, who abhor science, and want a book that they can skim over as they would a trashy novel, at two or three sittings, should not buy this. Those who are willing "to dig" a little for the sake of being well instructed, should give ten dollars for it if they could not get it of the publishers, post-paid, for one. It embraces, in 372 pages 8vo., the cream of all Prof. Johnston's writings on the application of science to agriculture; and although Prof. Johnston said some things about our country, not as gratifying to our national vanity as we could have desired, yet it is but simple justice to say, that of all the departed, he has done more than any other man to advance an intelligent cultivation of the soil.

We really wish that so many of our farmers as approve of a thoroughly instructive, scientific work, expressed in the plainest, most common sense English possible, would read this of Prof. Johnston, as revised and condensed by himself in the last days of his most useful life.

As a matter of accommodation to our subscribers, we will send this or any other book, post-paid, to their order, for the publisher's price enclosed—$1 00 in this case.

THE OBJECT OF LIFE.

This is one of the publications of the London Religious Tract Society. It is a beautifully-written, touching and impressive story. Its moral is that the largest measure of worldly success is altogether insufficient to satisfy the cravings of the soul, and that nothing but the religion of Christ can render life happy, either in prosperity or adversity. It is published by Carlton & Porter, 200 Mulbury st., New-York.

THE ITINERANT SIDE; OR, PICTURES OF LIFE IN THE ITINERACY.

The name of this book sufficiently indicates its object. It is pleasantly written, and

is adapted to be useful as well to other denominations as to that with which it is more specially connected. It is mostly in the narrative style, and embraces a great deal of what we consider an agreeable and profitable mode of teaching by example. Carlton & Porter, 200 Mulberry-st., New-York, are the publishers.

SERMONS OF THE REV. C. H. SPURGEON, OF LONDON. *Second Series.*

Of the first series of this powerful but excentric preacher's discourses, 15,000 copies were sold in this country. The volume before us is published by Sheldon, Blakeman & Co., New-York; Gould & Lincoln, Boston; and Griggs & Co., Chicago. The style is attractive, though, in some particulars, faulty. From the earnestness of the man, however, more than from any peculiarities of style, we presume his power proceeds. This volume contains 441 pages, and is well executed mechanically.

LIFE PICTURES; from a Pastor's Note Book. By ROBERT TURNBULL, author of "Christ a History," "Genius of Scotland," &c. New-York: Sheldon, Blakeman & Co. 1857. 342 pages, 12mo.

The object of this work is to bring out, "in concrete form," the true idea of the inner or divine life The style is exceedingly attractive, and the object of the writer, whose reputation is already widely spread, is very successfully carried out. It will be not only a popular but a very useful book. It is very handsomely executed.

GRACIE AMBER. By Mrs. C. W. DENISON, author of Home Pictures, What Not, Carrie Hamilton, &c. New-York: Sheldon, Blakeman & Co. 1857. 450 pages 12mo.

This is a sprightly volume, containing twenty-eight stories, with almost every variety of scene and character. A cursory reading leads us to a favorable opinion of the whole. Mrs. D. is already an author well known to a large circle of friends, who will be glad to see this volume.

ILLINOIS AS IT IS.—Its History, Geography, Statistics, Constitution, Laws, Government, Finances, Climate, Soil, Plants, Animals, State of Health, Prairies, Agriculture, Cattle breeding, Orcharding, Cultivation of the Grape, Timber growing, Market prices, Land and Land prices, Geology, Mining, Commerce, Banks, Railroads, Public Institutions, Newspapers, &c., &c. By FRED. GERHARD. Chicago, Ill.: Keen & Lee. New-York: Fowler & Wells. 451 pages, 12mo.

This Index, transferred to and forming a title page, tells the whole story. It is well got up, and is a very convenient manual for the emigrant and his friends, and for the general student.

THE LAWS OF HEALTH; or, SEQUEL TO THE HOUSE I LIVE IN. By WM. A. ALCOTT, M. D.; for families and schools. Boston: J. P. Jewett & Co. 1857. 424 pages, 12mo.

A full and well-written treatise on the very important subject of "Hygiene," covering, all the social and domestic habits, and showing their influence on health. It is handsomely executed by the publishers.

THE MORAL PHILOSOPHY OF COURTSHIP AND MARRIAGE; designed as a companion to The Physiology of Marriage. By the same author. Boston: J. P. Jewett & Co. 1857. 308 pages, 12mo.

This useful volume treats in two parts—of the nature and objects of courtship and marriage, and the proper qualifications for marriage, and is worthy of a place in every family, young or old.

MR. DUNN BROWNE'S EXPERIENCES IN FOREIGN PARTS. Boston: J. P. Jewett & Co. 1857. 285 pages, 12mo.

This neat little volume "enlarged from the Springfield Edition," is by a very funny writer. He sees everything with very remarkable eyes, and describes everything in a very remarkable manner. It is good to read it when your digestion troubles you.

How to Talk.—There is a neat little work of 152 pages, and an appendix, published by Fowler & Wells, 308 Broadway, New-York. Most people are more prone to talk than to hear, but as this book is adapted to teach them to talk in accordance with the rules of grammar and good sense, we think it a good thing. It may prevent a great many murders—we mean of the Queen's English—and a great deal of nonsense.

National Readers.—These are a series of readers, 1st, 2nd and 3rd, adapted to the various advancement of classes. The selections seem to be judiciously made. They are accompanied with exercises in articulation, accent, emphasis, pronounciation, and punctuation. Richard J. Parker, A. M., and J. Madison Watson are the authors, and A. S. Barnes & Co., 51 John-street, New-York, the publishers.

OUR JOURNAL.

We are for making it spicy, readable, varied in matter, of solid worth; meeting the wants of sober industry, yet containing something in each number *pleasing* as well as *instructive*, adapted to all the members of the families visited by it. Will fathers be offended if it contain rather more scientific articles than they might choose to trouble their own heads with, for the sake of their older children, or if we should have a few conundrums, riddles, curious questions, etc., etc., for the younger ones? We think not, as we would not allow these things to encroach very much upon the more solid matters to which our efforts are directed.

In order to economize space, and to condense into our numbers as great a variety as possible, we purpose hereafter to give in each number thirty-two pages, at the beginning, of matter specially practical and instructive to the farmer, under the separate heads of *Agriculture and Horticulture*. To make our work acceptable and useful to the husbandman, is our first and highest aim. The part he enacts in the world's economy is essential to the welfare of all; and whatever we can do to lighten his labors, to secure for them a better reward, or to hasten that high appreciation in which he deserves to be held, will be done with a *will*, with *earnestness*, with heartfelt *satisfaction*.

Our next sixteen pages will be devoted to matters of great interest to the mechanic —but of hardly less to the farmer. We shall write and select with reference to both; and under the distinct heads of *American Inventions*, *Foreign Inventions*, and *Patents*, we shall condense into these sixteen pages a large amount of information, if not as directly useful to the farmer as the preceding thirty-two pages, yet highly useful to him, as explaning important principles of farm engineering, and the construction of improved implements; but preëminently useful to the mechanic, and making our work at least as desirable for him as any other, especially if he consults our previous pages on the cultivation of the orchard and the garden, which every mechanic ought, if possible, to possess

Farmers and mechanics should never give in to the idea that they have nothing in common with each other. They are co-workers; they are mutual supporters of each other; together, they are the Atlas that upholds the world; severed, the collosal over-striding power of commerce will trample on them both. From the very fact that they are *workers*, not *talkers*, this noisy world will be tardy in doing them justice, dependent though it is on their service, as an infant upon its parents. We have undertaken to expound their rights and to defend their interests, as no other journal has. We ask their support. Shall we have it?

Our remaining sixteen pages will be filled with miscellaneous matters, under the

heads of *Scientific, Domestic, Children's Page, and Book Notices.* Under the first, we propose to give a series of articles, more strictly scientific than is common with such journals; and yet not abstractly scientific, not scientific in the miserable sense of using terms that few understand, but in that of illustrating important truths, of bringing them within the comprehension of all, and of applying them intelligibly to the great business of cultivating the soil. We hope to make these articles of great value to the farmers, and especially to young men aspiring to excel in this noble calling.

Under the head of *Domestic*, it is our purpose to concentrate as much information on matters of household economy as our space will allow. Our *Children's page* will be instructive to the *little folks*—perchance amusing; and we suppose no harm will be done if our oddities should make them laugh, and some good perhaps, if our questions should set them to *thinking.* In our *Book Notices, etc.*, we shall endeavor to give correct views of such works as come under our notice, and occasionally, as in this number, of an old one which we regard as peculiarly valuable.

We have reduced our price and adopted the cash system. It is our fixed purpose to publish a larger and better work than any other of the same price. And now, readers, there are two things we want you to do for us:—1st, those who have not paid, to pay up, and 2d, all to send us each a new subscriber or two. On the first point we have but little to say. We beg the few who are behind to remember that the balance due is but a small affair for each one of them, but in the aggregate is important to us, and to enclose accordingly. As mistakes will happen, we may have in some cases erred in our charges. We certainly have not intended it. If any, to whom bills may have been forwarded wrongfully, will write us an explanation of the case, they shall find us ready for an honorable and fair adjustment.

On the other point we have more to say. Every one can see that a reduction in the price of a publication implies a much larger reduction in the profits. If it costs you a dollar to grow a bushel of wheat, and you sell it for two dollars, your profit is a hundred per cent; but it does not follow that if you sell it for half as much, your profit is half as great. On the contrary, it is reduced to nothing. Now, we do not pretend that we have put our price down to the point of no profit; but we have reduced it to a point requiring five times as many subscribers to support the work, as would have supported it at the old price; and we are not sorry for it—only give the increased number, and we shall be far better suited than before. But as we have put our price below the point, at which a periodical can be sustained by sending out agents, paying commissions and traveling expenses, we are dependent upon our old readers—those who already know and approve our efforts—to make them known among their neighbors and acquaintances, and we beg that they will do so. We should be ungrateful not to acknowledge that many of them have, and that we are daily reaping the benefits; but as others have not, we must beg them to go and do likewise. The fact is, a very little persuading will induce almost any man to subscribe for such a journal, at such a price.

Reader, just try it, and you will find it as we say. There are probably half a dozen men in your neighborhood, who would either take this journal at the price per single copy, or in a club, at club prices, if you would show them a copy and name the terms. Look around you and see if it is not so, and let us hear from you. Fresh copies shall be forwarded without expense to you, to be used as samples, if you will notify us by a line that you desire it; and if you choose to form a club, and become one of its members, thereby reducing the price of your own subscription, you are at full liberty to do it. All we ask, and in that we are heartily in earnest, is, that you will aid us in making our journal—its character and object, its claims and its terms—known in your region. That you *will* do. Now, don't say us nay.

CORRECTION.—The printer's boy in our last made us notice a treatise, a most valuable one it is, on "Grapes and Forage Plants," by C. L. Flint, Esq., Secretary of the Mass. State Agricultural Board. We suppose the boy was not aware that cattle oftener feed on *grasses* than on *grapes*. But probably our readers "*guessed*" at what was meant.

THE GOOD OUTWEIGHS THE EVIL.—A writer in the *Germantown Telegraph* says—and we think proves beyond the possibility of a doubt—that the birds are the farmer's best friends; that even the crow, the most hated of all, does him more good by the destruction of insects, than harm by his occasional depredations; and that crows should rather be encouraged by the farmer as friends, than persecuted as enemies. We will publish his thoughts and reasonings in a future number. Meantime, let farmers and farmers' boys "*spare the birds.*" N.

BLACK CURRANT WINE.—At the late Convention of Fruit Growers of Western New-York, several gentlemen presented facts in relation to the manufacture of *Currant Wine*. These gentlemen were requested to prepare a statement of their practice for publication. In accordance with this request, Dr. Long furnishes the following:

Pick and squeeze the currants when fully ripe. To one gallon of juice add six quarts of water, and to each gallon of this mixture add three and a half pounds of brown sugar. Mix well together and strain. Put into a cask, and let it be ventilated till it shall have passed the active or vinous fermentation, when it may be well corked. As it will improve by age, it may be well to let it stand undisturbed for years, unless wanted for medical purposes.—*Rural New-Yorker.*

TO MAKE CORN BREAD.—Two qts. corn meal, one qt. rye, one qt. of sweet milk, one qt. of buttermilk, one teacup of molasses, one spoonful of salt, and one teaspoonful of soda. Beat with a spoon until well mixed. The crust, if not burned, will make excellent coffee.

PICKLE FOR BEEF.—To one hundred weight of beef four qts. of salt, two oz. of saltpetre, and one pint of molasses; mix in water enough to cover the meat.

NEW-YORK CATTLE MARKET.

TOTAL RECEIPTS FOR THE WEEK ENDING APRIL 22.

	Beeves.	Cows.	Calves.	Sheep and Lambs.	Swine.
At Allerton's	2,135	47	841	615	1,375
" Browning's	174	47	62	1,329	——
" O'Brien's	102	160	84	——	——
" Chamberlain's	114	407	181	1,343	——
Sold at Bergen	80	——	——	——	——
	2,605	817	1,188	3,287	4,175
Last week	3,884	388	965	3,288	7,741

PRICES.—*Cattle*, first quality, $13@13 50; medium, $12@12 50; ordinary, $11 50@12. *Cows and Calves*, of fair quality, $50, and from that, according to quality, to $100, and in some cases as high as $100 and $125. *Calves*, numerous but poor, some half starved and some more than half, some finished by the butcher's knife and some by the storm; and as we New-Yorkers are a hungry set, they all get eaten. *Sheep*, fair quality, 13 cents a lb. *Swine*, first quality, 7¼@7½c. a lb., live weight; second quality, 7@7¼c.; first quality, small sizes, fat and prime for the butcher, 7¾@8c.

PREMIUM EXTRA.—We will send (carefully inclosed, warranted perfect, and without expense to the receiver,) a copy of The People's Pictorial Domestic Bible, (**See Advertisement,**) to any person who will send us the names of eight new subscribers with sixteen dollars. See also in our last, page 636, the offer of premiums for clubs:—a book worth 75 cents for a club of four; a bound volume worth $1 for a club of five, six or seven; and a bound volume richly worth $2 for a club of eight or upwards, to be sent by return of mail post paid.—EDS.